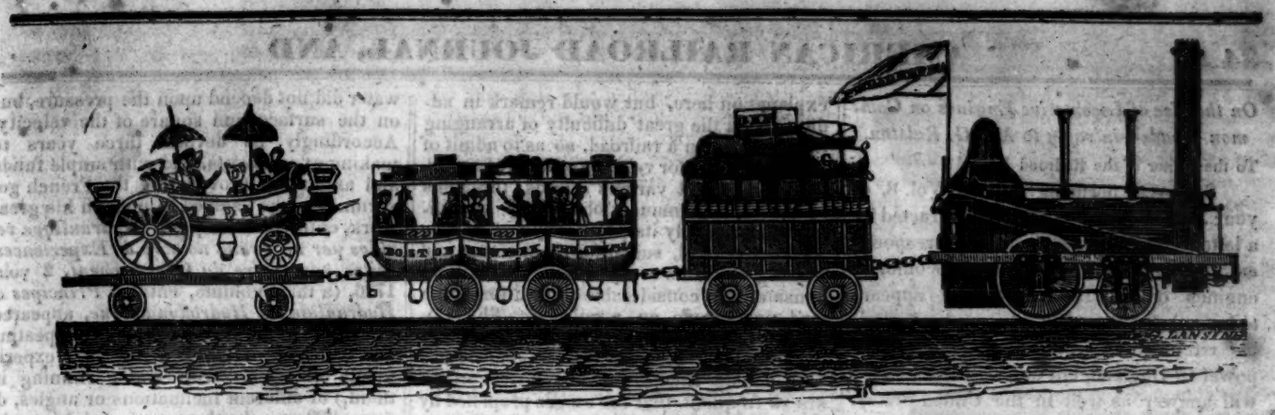

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, JANUARY 24, 1835.

We are indebted to the Hon. G. Hard, Member of Congress, for a copy of the Report made by A. Stewart, Esq., of the committee appointed to ascertain the probable amount of tolls on the Chesapeake and Ohio canal when completed to Cumberland, from which we shall make liberal extracts at an early period.

Overland Journey to India.—In reply to our request for information relative to the state and progress of internal communication and improvements in the East, we have been politely furnished, by a subscriber, with several numbers of the Asiatic Journal, in which we find several interesting articles relative to the overland route from India to Europe, which we shall at an early day transfer to our columns.

We are grateful for such favors, and solicit from friends the privilege of looking at such of their foreign periodicals, that we do not receive, as will enrich our columns.

Boston and Providence Railroad.—The annual report of the Directors of this Corporation has been laid before the Legislature of Massachusetts and presents the following facts. During the past year, the graduation of the road bed has been completed from the depot at Boston to the Rhode Island line at India bridge, excepting sundry sections of the extent of about a mile and a quarter in all, which are expected to be completed on or before the first of May. A single track has been laid from the depot at Boston, for the distance of about twenty-one miles, excepting for a mile and a half in Canton, where the graduation is not yet completed; and there are also about four miles more of the rail laid in different places; making an aggregate length of rail already laid, of twenty three miles and a half. Stone foundations have been prepared throughout the remaining distance, where the graduation is completed, wherever they were considered necessary. The requisite materials for the completion of the whole have been engaged, and the directors see nothing to prevent the opening of the road by the first of June. It is believed by the agent, that the expense of the whole road will not vary materially from the original estimate.

The directors have also caused a branch railroad to be completed, during the past year, from the Low Plain in Dedham to Dedham village, the distance being about two miles and a quarter.

The whole amount of expenditures during the past year, has been $552,506 7, and of receipts $526,139 98. Of the latter amount, $516,560 have been received from the stockholders by virtue of assessement; $5,084 74 from the transportation of passengers and goods, $2,632 63 rom the sale of materials; and $862 61 from rents: the accounts being made up to the first day of the present month.

The new locomotive engine purchased for the use of the Lexington and Ohio Railroad Company, was brought up to town on Wednesday, and will, we understand, be put in operation on the road in the course of a week.

Since the railroad was opened to Frankfort, the passenger cars have been uniformly crowded both ways. Nothing is more common now than for a gentleman to take a morning ride to the seat of Government, spend several hours there in watching the movements of the Legislature, and return to Lexington again in the afternoon, without fatigue to himself, and with but a trifling call upon his purse. Heretofore, at this season of the year, the distance between Lexington and Frankfort has been considered a full day's journey on horseback, and the urgency of business alone could form a sufficient inducement to prevail upon a citizen to undertake it. When the locomotive is put upon the road, a single hour will suffice to accomplish the same distance, so that time, space, and the worst of obstacles to winter travelling, *mud*, will all be overcome.—[Lexington, Ky., Gaz.]

General Knowledge.—Whatever may be thought of the following remarks of Sir William Temple in other respects, their justice in relation to the medical profession must be universally acknowledged. "It is certain, however," says this distinguished writer, "that the study of physic is not achieved in any eminent degree, without very great advancements in the sciences; so that whatever the profession is, the professors have been generally very much esteemed on that account, as well as of their own art, as the most learned men of their ages, and thereby shared with the two other great professions in those advantages most commonly valued, and most eagerly pursued; whereof the divines seem to have had the most honor, the lawyers the most money, and the physicians the most learning."

Hippocrates was profoundly skilled in natural knowledge, before he commenced the study of medicine; and it has become a common saying, that where the natural philosopher ends, the physician begins. The laws which regulate other material substances apply to the human body. Chemistry is all essential to a physician. "I do not hesitate to pronounce," said Fourcroy, "that modern chemistry has done more, in twenty years, for medicine, than all the united labors of preceding ages." The materia medica is supplied from the three kingdoms of nature. Without a knowledge of botany, mineralogy, and zoology, a physician cannot understand the medicines he prescribes, and as the nomenclature of his profession is derived from the learned languages, and principally from the Greek, he ought to be a classical scholar. In a word, he should have a general acquaintance with all the departments of human knowledge, in order to compose that learned man which is expected from an able and accomplished physician.—[Scientific Tracts.]

On the Use of Locomotive Engines on Common Roads—in reply to Mr. G. Ralston.

To the Editor of the Railroad Journal:

Sir,—On perusing No. 49, Vol. 3, of your Journal, my attention was attracted by a letter from your respectable correspondent, Mr. Ralston, on the use of locomotive engines on common roads. He appears to be satisfied that they may, under favorable circumstances, compete with animal power in England, but doubts whether they will answer as well in the United States. My purpose is to invite attention to the reasons given by Mr. R. for this conclusion, and to the means of obviating such objections as appear to be most formidable. The facts on which Mr. R. has founded his conclusion may be classed under two general heads: 1. The greater economy of steam power and machinery in England than in the United States, and the greater economy of animal power in the United States than in England; 2. The imperfect condition of our roads, compared with those of England. As to the first point, I would observe, that although the facts stated are no doubt true, yet it does not follow from them, that steam power is not cheaper than animal power in the United States. The difference is not so great as in England, but it is fully proved by experience, that steam power applied on a railroad is, if any, little more than half the expense of animal power. It may be further remarked, that the application of steam in propelling a locomotive on an iron rail, is subject to a peculiar disadvantage in comparison with animal power, which would not occur upon a common road. This arises from the slipping of the car wheels on ascents, *before the engine has exerted her full power*. To avert this great inconvenience, the weight of the engine must be increased to obtain sufficient adhesion; which additional weight requires an extra, and otherwise superfluous, force to propel it. It is conceded, I believe, that on the common road there is no want of adhesion, and hence lighter engines may be employed with decided advantage. These facts show, that the difference of expense between steam and animal power must be greater on common roads than on a railway; and whatever may be the advantages of that power on the railroad, we have an assurance of a still greater relative advantage on the common road. The first objection suggested by Mr. Ralston does not, therefore, as I think, sustain his doubt of the profitable substitution of steam for animal power on the common road in the United States. The next objection, founded on the imperfect condition of our roads, is altogether conclusive: no engineer, in his senses, would risk a locomotive engine upon the convex, uneven, and rough surface of our best turnpike roads. If, therefore, we would employ the locomotive off the railroad, it must not be on a *common*, but a *proper* road, made for, and restricted exclusively to, that purpose; which, I apprehend, could be better adapted to the locomotive than even the best roads in England, especially if the wheels of the locomotive are made very wide, and otherwise perfectly adapted for this use. Having explained the plan of such a road in No. 5, Vol. 3, of your Journal, I need not repeat the explanation here, but would remark in addition, that the great difficulty of arranging the business on a railroad, so as to admit of its general use for vehicles of different owners, running at various speeds, threatens to become a permanent obstacle to its utility, and especially its popularity. A proper locomotive road, suited for the meeting and passing of trains every where, would compensate for a considerable diminution of the load now drawn on a railroad. The Columbia railroad in Pennsylvania, made by the State, has been opened for general use with double tracks, but the interruptions are so frequent, that the stages propelled by locomotives can only run 8 or 9 miles an hour. It has therefore been proposed by the State authorities, to manage the whole transportation by their agents, in order to regulate the times for starting, meeting, passing places, &c. But this indispensable measure is about to be strenuously opposed by the inhabitants on the borders. A hard gravel or stone road, graded for the purpose, and made wide enough for vehicles to pass or meet, would remove all necessity for this arrangement, and individuals or companies, as many as might choose to embark, could establish trains for travelling or freight, securing to the public all the benefits of the most active competition. Yours, &c.

J.

Dec. 29, 1834.

[From the Repertory of Patent Inventions.]

Report on the Progress and Present State of our Knowledge of Hydraulics as a Branch of Engineering. By George Rennie, Esq., F. R. S., &c. &c. Part I.

(Continued from page 21.)

Unappalled, however, by these difficulties, the Chevalier Buat, after perusing attentively M. Bossut's work, undertook to solve them by means of a theorem which appeared to him to be the key of the whole science of hydraulics. He considered that if water was in a perfect state of fluidity, and ran in a bed from which it experienced no resistance whatever, its motion would be constantly accelerated, like the motion of a heavy body descending an inclined plane—but as the velocity of a river is not accelerated *ad infinitum*, but arrives at a state of uniformity, it follows that there exists some obstacle which destroys the accelerating force, and prevents it from impressing upon the water a new degree of velocity. This obstacle must therefore be owing either to the viscidity of the water, or to the resistance it experiences against the bed of the river; from which Dubuat derives the following principle. That when water runs uniformly in any channel, the accelerating force which obliges it to run is equal to the sum of all the resistances which it experiences, whether arising from the viscidity of the water or the friction of its beds. Encouraged by this discovery, and by the application of its principles to the solution of a great many cases in practice, Dubuat was convinced that the motion of water in a conduit pipe was analogous to the uniform motion of a river, since in both cases gravity was the cause of motion, and the resistance of the channel or perimeter of the pipes the modifiers. He then availed himself of the experiments of Bossut on conduit pipes and artificial channels to explain his theory: the results of which investigations were published in the year 1779. M. Dubuat was, however, sensible that a theory of so much novelty, and at variance with the then received theory, required to be supported by experiments more numerous and direct than those formerly undertaken, as he was constrained to suppose that the friction of the water did not depend upon the pressure, but on the surface and square of the velocity. Accordingly, he devoted three years to making experiments, and with ample funds and assistance provided by the French government, was enabled to publish his great work, entitled *Principes d' Hydraulique verifies par un grand nombre d' Experiences, faites par Ordre du Governement*, 2 vols. 1786, (a third volume, entitled *Principes d' Hydraulique et Hydrodynamique*, appeared in 1816); in the first instance, by repeating and enlarging the scale of Bossut's experiments on pipes, (with water running in them,) of different inclinations or angles, of from 90° to $\frac{1}{10000}$th part of a right angle, and in channels of from $\frac{1}{2}$ line in diameter to 7 and 8 square toises of surface, and subsequently to water running in open channels, in which he experienced great difficulties in rendering the motion uniform; but he was amply recompensed by the results he obtained on the diminution of the velocity of the different parts of a uniform current, and of the relation of the velocities at the surface and bottom, by which the water works its own channel, and by the knowledge of the resistances which different kinds of beds produce, such as clay, sand, and gravel; and varying the experiments on the effect of sluices, and the piers of bridges, &c., he was enabled to obtain a formula applicable to most cases in practice.*

Thus let V = mean velocity per second, in inches;

d = hydraulic mean depth, or quotient, which arises from dividing the area or section of the canal in square inches, by the perimeter of the part in contact with the water, in linear inches;

s = the slope or declivity of the pipe, or the surface of the water;

g = 16·087, the velocity in inches which a body acquires in falling one second of time;

n = an abstract number, which was found by experiment to be equal to 243·7;

$$\text{Then } v = \frac{\sqrt{n\,g}\ (\sqrt{d} - 0{\cdot}1)}{\sqrt{s} - \log.\sqrt{s} + 1{\cdot}6} - 0{\cdot}3\ (\sqrt{d} - 0.)$$

Such are the objects of M. Dubuat's work. But his hypotheses are unfortunately founded upon assumptions which render the applications of his theory of little use. It is evident that the supposition of a constant and uniform velocity in rivers cannot hold: nevertheless, he has rendered great services to the science by the solution of many important questions relating to it; and although he has left on some points a vast field open to research, he is justly entitled to the merit of originality and accuracy.

Contemporary with Dubuat was M. Chezy, one of the most skilful engineers of his time: he was director of the Ecole des Ponts et Chaussees, and reported, conjointly with M. Perronet, on the Canal Yvette. He endeavored to assign, by experiment, the relation existing between the inclination, length, transverse section, and velocity of a canal. In the course of this investigation he obtained a very simple expression of the velocity, involving three different variable quantities, and capable, by means of a single experiment, of being applied to all currents whatever. He assimilates the resistance of the sides and bottom of the canal to known resistances, which follow the law

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* Edinburgh Encyclopædia, art. Hydrodynamics, by Brewster.

of the square of the velocity, and he obtains the following simple formula:

$v = \frac{\sqrt{g\,d}}{z\,s}$, where g is = 16·087 feet, the heavy body after falling one second;
d = hydraulic mean depth, equal to the area of the section divided by the perimeter of the part of the canal in contact with the water;
s = the slope or declivity of the pipe;
z = an abstract number, to be determined by experiment.

In the year 1784, M. Lespinasse published in the Memoirs of the Academy of Science at Toulouse two papers, containing some interesting observations on the expenditure of water through large orifices, and on the junction and separation of rivers. The author had performed the experiments contained in his last paper on the rivers Fresquel and Aude, and on that part of the canal of Languedoc below the Fresquel lock, towards its junction with that river.

As we before stated, M. Dubuat had classified with much sagacity his observations on the different kinds of resistance experienced in the motion of fluids, and which might have led him to express the sum of the resistances by a rational function of the velocity composed of two or three terms only. Yet the merit of this determination was reserved to M. Coulomb, who, in a beautiful paper, entitled "Experiences destinees a determiner la Coherence des Fluides et les Lois de leurs Resistances dans les Mouvemens tres lents," proves, by reasoning and facts,

1st. That in extremely slow motions the part of the resistance is proportional to the square of the velocity;

2dly. That the resistance is not sensibly increased by increasing the height of the fluid above the resisting body;

3dly. That the resistance arises solely from the mutual cohesion of the fluid particles, and not from their adhesion to the body upon which they act;

4thly. That the resistance in clarified oil, at the temperature of 69° Fahrenheit, is to that of water as 17·5 : 1; a proportion which expresses the ratio of the mutual cohesion of the particles of oil to the mutual cohesion of the particles of water.

M. Coulomb concludes his experiments by ascertaining the resistance experienced by cylinders that move very slowly and perpendicularly to their axes, &c.

This eminent philosopher, who had applied the doctrine of tension with such distinguished success in investigating the phenomena of electricity and magnetism, entertained the idea of examining in a similar manner the resistance of fluids, contrary to the doctrines of resistance previously laid down. M. Coulomb proved, that in the resistance of fluids against solids, there was no constant quantity of sufficient magnitude to be detected; and that the pressure sustained by a moving body is represented by two terms, one which varies as the simple velocity, and the other with its square.

The apparatus with which these results were obtained consisted of discs of various sizes, which were fixed to the lower extremity of a brass wire, and were made to oscillate under a fluid by the force of tension of the wire. By observing the successive diminution of the oscillations, the law of resistance was easily found. The oscillations which were best suited to these experiments continued for twenty or thirty seconds, and the amplitude of the oscillation (that gave the most regular results) was between 480, the entire division of the disc, and 8 or 10 divisions from zero.

The first who had the happy idea of applying the law of Coulomb to the case of the velocities of water running in natural or artificial channels, was M. Girard, Ingenieur en Chef des Ponts et Chaussees, and Director of the works of the Canal l'Ourcq at Paris.*

He is the author of several papers on the theory of running waters, and of a valuable series of experiments on the motions of fluids in capillary tubes.

M. Coulomb had given a common co-efficient to the two terms of his formula, representing the resistance of a fluid,—one proportional to the simple velocity, the other to the square of the velocity. M. Girard found that this identity of the co-efficients was applicable only to particular fluids under certain circumstances; and his conclusions were confirmed by the researches of M. Prony, derived from a great many experiments, which make the co-efficients not only different, but very inferior to the value of the motion of the filaments of the water contiguous to the side of the pipe.

The object of M. Girard's experiments was to determine this velocity; and this he has effected in a very satisfactory manner, by means of twelve hundred experiments, performed with a series of copper tubes, from 1·83 to 2·96 millimetres in diameter, and from 20 to 222 centimetres in length; from which it appeared, that when the velocity was expressed by 10, and the temperature was 0, centigrade, the velocity was increased four times when the temperature amounted to 85 degrees. When the length of the capillary tube was below that limit, a variation of temperature exercised very little influence upon the velocity of the issuing fluid, &c.

It was in this state of the science that M. Prony, (then having under his direction different projects for canals,) undertook to reduce the solution of many important problems on running water to the most strict and rigorous principles, at the same time capable of being applied with facility to practice.

For this purpose he selected fifty-one experiments which corresponded best on conduit pipes, and thirty-one on open conduits. Proceeding, therefore, on M. Girard's theory of the analogy between fluids and a system of corpuscular solids or material bodies, gravitating in a curvilinear channel of indefinite length, and occupying and abandoning successively the different parts of the length of channel, he was enabled to express the velocity of the water, whether it flows in pipes or in open conduits, by a simple formula, free of logarithms, and requiring merely the extraction of the square root.†

Thus $v = -0{\cdot}0469734 + \sqrt{0{\cdot}0022065 + 3041{\cdot}47 \times G}$, which gives the velocity in metres: or, in English feet,

$v = -0{\cdot}1541131 + \sqrt{0{\cdot}023751 + 32806{\cdot}6 \times G}$.

When this formula is applied to pipes, we must take $G = \frac{1}{4}\,D\,K$, which is deduced from the equation $K = \frac{H + Z = H}{L}$. When it is applied to canals, we must take $G = R\,I$, which is deduced from the equation $I = \frac{Z}{L}$, K being equal to the mean radius of Dubuat on the hydraulic mean depth, and I equal to the sine of inclination in the pipe or canal. M. Prony has drawn up extensive tables, in which he has compared the observed velocities with those which are calculated from the preceding formulæ, and from those of Dubuat and Girard. In both cases the coincidence of the observed results with the formulæ is very remarkable, but particularly with the formulæ of M. Prony. But the great work of M. Prony is his *Nouvelle Architecture Hydraulique*, published in the year 1790. This able production is divided into five sections, viz. Statics, Dynamics, Hydrostatics, Hydrodynamics, and on the physical circumstances that influence the motion of machines. The chapter on hydrodynamics is particularly copious and explanatory of the motions of compressible and incompressible fluids in pipes and vessels, on the principle of the parallelism of the fluid filaments, and the efflux of water through different kinds of orifices made in vessels kept constantly full or permitted to empty themselves; he details the theory of the clepsydra, and the curves described by spouting fluids; and having noticed the different phenomena of the contraction of the fluid vein, and given an account of the experiments of Bossut, M. Prony deduces formulæ by which the results may be expressed with all the accuracy required in practice.

In treating of the impulse and resistance of fluids, M. Prony explains the theory of Don George Juan, which he finds conformable to the experiments of Smeaton, but to differ very materially from the previously received law of the product of the surfaces by the squares of the velocities, as established by the joint experiments of D'Alembert, Condorcet, and Bossut, in the year 1775. The concluding part of the fourth section is devoted to an examination of the theory of the equilibrium and motion of fluids according to Euler and D'Alembert; and by a rigorous investigation of the nature of the questions to be determined, the whole theory is reduced to two equations only, in narrow pipes, according to the theory of Euler, showing its approximation to the hypothesis of the parallelism of filaments.

The fifth and last section investigates the different circumstances, such as friction, adhesion, and rigidity, which influence the motion of machines.

A second volume, published in the year 1796, is devoted to the theory and practice of the steam-engine. Previously to the memoir of M. Prony, *Sur le Jaugeage des Eaux courantes*, in the year 1802, no attempt had been made to establish with certainty the correction to be applied to the theoretical expenditures of fluids through orifices and additional tubes. The phenomenon had been long noticed by Sir Isaac Newton, and illustrated by Michelotti by a magnificent series of experiments, which, although involving some intricacies, have certainly formed the ground-work of all the subsequent experiments upon this particular subject.

By the method of interpolation, M. Prony has succeeded in discovering a series of formulæ applicable to the expenditures of currents out of vertical and horizontal orifice, and to the contraction of the fluid vein; and in a subsequent work, entitled *Recherches sur le Mouvemens des Eaux courantes*, he establishes the following formulæ for the mean velocities of rivers.

When V = velocity at the surface,
and U = mean velocity,
U = 0·816458 V,
which is about $\frac{4}{5}$ V.

These velocities are determined by two methods. 1st. By a small water-wheel for the velocity at the surface, and the improved tube of Pitot for the velocities at different depths below the surface.

* Essai sur le Mouvement des Eaux courantes: Paris: 1804. Recherches sur les Eaux publiques, &c. Devis general du Canal l'Ourcq, &c.

† Memoires des Savans Etrangers, &c., 1815.

If h = the height of the water in the vertical tube above the level of the current, the velocity due to this height will be determined by the formulæ

$$V = \sqrt{2\,g\,h} = \sqrt{\text{metres}}\ 19{\cdot}606\ h = 4{\cdot}429\ \sqrt{h}.$$

When water runs in channels, the inclination usually given amounts to between $\frac{1}{300}$th part of the length, which will give a velocity of nearly $1\frac{1}{4}$ mile per hour, sufficient to allow the water to run freely in earth. We have seen the inclination very conveniently applied in cases of drainage at $\frac{1}{1200}$th and $\frac{1}{1500}$ th, and some rivers are said to have $\frac{1}{3000}$th only.

M. Prony gives the following formula from a great number of observations:

If U = mean velocity of the water in the canal,
I = the inclination of the canal per metre,
R = the relation of the area to the profile of its perimeter,

we shall have

$$U = -0{\cdot}67 + \sqrt{0{\cdot}005 + 3233.\ R.\ I};$$

and for conduit pipes,

calling U = the mean velocity,
Z = the head of water in the inferior orifice of the pipe,
L = the length of the pipe in metres,
D = the diameter of the pipe,

we shall have, $U = -$

$$0{\cdot}0248829 + \sqrt{0{\cdot}000619159 + 717{\cdot}857\,\frac{DZ}{L}};$$

or, where the velocity is small,

$$U = 26{\cdot}79\,\sqrt{\frac{DZ}{L}};$$

that is, the mean velocities approximate to a direct ratio compounded of the squares of the diameters and heads of water, and inversely as the square root of the length of the pipes: and by experiments made with great care, M. Prony has found that the formula, $U = -$

$$0{\cdot}0248829 + \sqrt{0{\cdot}000619159 + 717{\cdot}857\,\frac{DZ}{L}};$$

scarcely differs more or less from experiments than $\frac{1}{10}$ or $\frac{1}{15}$. The preceding formulæ suppose that the horizontal sections, both of the reservoir and the recipient, are great in relation to the transverse section of the pipe, and that the pipe is kept constantly full.*

In comparing the formulæ given for open and close canals, M. Prony has remarked that these formulæ are not only similar, but the constants which enter into their composition are nearly the same, so that either of them may represent the two series of phenomena with sufficient exactness.

The following formula applies equally to open or close canals:

$$U = -0{\cdot}0468734 + \sqrt{(0{\cdot}0022065 + 3041{\cdot}47\,\frac{DZ}{L}}\Big\}.$$

But the most useful of the numerous formulæ given by M. Prony for open canals is the following:

Let g = the velocity of a body falling in one second,
w = the area of the transverse section,
p = the perimeter of that section,
I = the inclination of the canal,
Q = the constant volume of water through the section,
U = the mean velocity of the water,
R = the relation of the area to the perimeter of the section,

then, 1st,

$$0{\cdot}000436\,U + 0{\cdot}003034\,U^2 = g\,I\,R = g\,I\,\frac{w}{p};$$

2dly, $U = \frac{Q}{w}$;

3rdly, $R\,w^2 - 0{\cdot}000444499\,.\,w\,\frac{Q}{I} - 0{\cdot}000309314\,\frac{Q^2}{I} = 0.$

This last equation, containing the quantities $Q\ I\ w$ and $R = \frac{w}{p}$;

shows how to determine one of them, and, knowing the three others, we shall have the following equations:

4thly, $p = \frac{g\,I\,w^2}{0{\cdot}000436\,Q\,w + 0{\cdot}003034\,Q^2}$;

5thly,

$$I = \frac{p\,(0{\cdot}0000444499\,Q\,w + 0{\cdot}000309314\,Q^2)}{};$$

6thly, $w = 0{\cdot}000436 \pm$

$$\frac{\sqrt{[(0{\cdot}000436)^2 + 4(0{\cdot}003034)\,g\,R\,I]}\,Q}{^2g\,R\,I}.$$

These formulæ are, however, modified in rivers by circumstances, such as weeds, vessels, and other obstacles in the rivers; in which case M. Girard has conceived it necessary to introduce into the formulæ the co-efficient of correction = 1·7 as a multiplier of the perimeter, by which the equations will be,

$$p - 1{\cdot}7\,(0{\cdot}000436\,U + 0{\cdot}003034\,U^2) = g\,I\,w.$$

The preceding are among the principal researches of this distinguished philosopher.*

In the year 1798, Professor Venturi of Modena published a very interesting memoir, entitled *Sur la Communication laterale du Movement des Fluides.* Sir Isaac Newton was well acquainted with this communication, having deduced from it the propagation of rotatory motion from the interior to the exterior of a whirlpool; and had affirmed that when motion is propagated in a fluid, and has passed beyond the aperture, the motion diverges from that opening, as from a centre, and is propagated in right lines towards the lateral parts. The simple and immediate application of this theorem cannot be made to a jet or aperture at the surface of still water. Circumstances enter into this case which transform the results of the principal into particular motions. It is nevertheless true, that the jet communicates its motion to the lateral parts without the orifice, but does not repel it in a radial divergency. M. Venturi illustrates his theory by experiments on the form and expenditure of fluid veins issuing from orifices, and shows how the velocity and expenditure are increased by the application of additional tubes; and that in descending cylindrical tubes, the upper ends of which possess the form of the contracted vein, the expense is such as corresponds with the height of the fluid above the inferior extremity of the tube. The ancients remarked that a descending tube applied to a reservoir increased the expenditure.† D'Alembert, Euler, and Bernoulli, attributed it to the pressure of the atmosphere. Gravesend, Guglielmini, and others, sought for the cause of this augmention in the weight of the atmosphere, and determined the velocity at the bottom of the tube to be the same as would arise from the whole height of the column, including the height of the reservoir. Guglielmini supposed that the pressure at the orifice below is the same for a state of motion as for that of rest, which is not true. In the experiments he made for that purpose, he paid no regard either to the diminution of expenditure produced by the irregularity of the inner surface of the tubes, or the augmentation occasioned by the form of the tubes themselves. But Venturi established the proposition upon the principle of vertical ascension combined with the pressure of the atmosphere, as follows:

1st. That in additional conical tubes the pressure of the atmosphere increases the expenditure in the proportion of the exterior section of the tube to the section of the contracted vein, whatever be the position of the tube.

2dly. That in cylindrical pipes the expenditure is less than through conical pipes, which diverge from the contracted vein, and have the same exterior diameter. This is illustrated by experiments with differently formed tubes, as compared with a plate orifice and a cylindrical tube, by which the ratios in point of time were found to 41″, 31,″ and 27″, showing the advantage of the conical tube.

3dly. That the expenditure may be still further increased, in the ratio of twenty-four to ten, by a certain form of tube,—a circumstance of which he supposes the Romans were well aware, as appears from their restricting the length of the pipes of conveyance from the public reservoirs to fifty feet; but it was not preceived that the law might be equally evaded by applying a conical frustum to the extremity of the tube.

M. Venturi then examines the causes of eddies in rivers; whence he deduces, from his experiments on tubes with enlarged parts, that every eddy destroys part of the moving force of the current of the river, of which the course is permanent and the sections of the bed unequal; that the water continues more elevated than it would have done if the whole river had been equally contracted to the dimensions of its smallest section, a consequence extremely important in the theory of rivers, as the retardation experienced by the water in rivers is not only due to the friction over the bed, but to eddies produced from the irregularities in the bed, and the flexures or windings of its course: a part of the current is thus employed to restore an equilibrium of motion, which the current itself continually deranges. As respects the contracted vein, it had been pretended by the Marquis de Lorgna* that the contracted vein was nothing else but a continuation of the Newtonian cataract, and that the celerity of the fluid issuing from an orifice in a thin plate, is much less than that of a body which falls from the height of the charge. But Venturi proved that the contraction of the vein is incomparably greater than can be produced by the acceleration of gravity, even in descending streams: the contraction of the stream being 0·64, and the velocity nearly the same as that of a heavy body which may have fallen through the height of the charge. These experimental principles, which are in accordance with the results of Bossut, Michelotti, and Poleni, are strictly true in

* According to Mr. Jardine's experiments on the quantity of water delivered by the Coniston Main, from Coniston to Edinburgh, the following is a comparison:

	Scots Pints.
Actual delivery of Coniston Main	189·4
Ditto by Eytelwein's formula	189·77
Ditto by Girard's formula	189·26
Ditto by Dubuat's formula	188·13
Ditto by Prony's simple formula	192·32
Ditto by Prony's tables	189·7

* Recherches Physico-Mathematiques sur la Theorie des Eaux courantes, par M. Prony.

† "Calix devexus amplius rapit."—[Frontinus de Aqueductibus.] See also the Pneumatics of Hero.

* Memoire della Societa Italiana, vol. iv.

all cases where the orifice is small in proportion to the section of the reservoir, and when that orifice is made in a thin plate, and the internal afflux of the filaments is made in uniform manner round the orifice itself.

Venturi then shows the form and contraction of the fluid vein, by increased charges. His experiments with the cone are curious; it would have been greatly to be regretted that he had stopped short in his investigations, but for the more extensive researches of Bidone and Lesbros. M. Hachette, in opposition to the theory of Venturi, assigns, as a cause of the increase by additional tubes, the adhesion of the fluid to the sides of the tubes arising from capillary attraction.

(To be continued.)

[From the London Mechanics' Magazine.]

Mathematics and Mathematicians.

Sir,—I have just read Mr. Cheverton's explanation on the subject of the claims of mathematical science, in answer to my two last short articles. His last explanation is truly worthy of his two preceding articles. When such assertions are called explanations, nothing in nature need remain unexplained. The most important parts of his communication may be easily refuted from some articles in the Mechanics' Magazine—written by whom, do you think, Mr. Editor? —why, by no less a person than Mr. Cheverton himself. So much, in the mean time, for his consistency.

Having shown, in my last communication, that had it not been for the discoveries of Euler on the refrangibility of light, (in opposition to the opinion of Newton,) the achromatic telescope might have to this day remained a mere speculation, it may not be out of place, before leaving this part of the subject, to mention the great improvements that have been made in these instruments by the late Fraunhofer, a German philosopher, eminently distinguished for his high scientific attainments and practical skill. He has constructed telescopes with the most perfect object lenses, and of nine times any former dimensions, the power and brilliancy of which surpass all former attempts.

One would be apt to fancy, from the account Mr. C. has given, (No. 572, p. 277, col. 2,) of the way in which the Eulers and Bernoullis amused themselves with their experiments on gyratory motion, *tractory curves*,* (untractable curves would surely have been a better name for them), unmanageable equations, &c., that they were wasting their time for no useful purpose. He might, with equal propriety, have applied the same terms of ridicule to Sir I. Newton's experiments in finding the deflecting force of the moon, and many more; or to the experiments of Maskelyne, Hutton, and Cavendish, for ascertaining the mean density of the earth. Of course, all these things, according to the Chevertonian philosophy, are mere matters of moonshine. However, be that as it may, no country has done more justice to the mighty discoveries of Euler than England has done. I shall select, for Mr. Cheverton's edification, a few testimonials in his favor, from the writings of some eminent English mathematicians.

"Euler," says Dr. Hutton, in his Mathematical Dictionary, "was one of the most extraordinary, and even prodigious, mathematical geniuses that the world ever produced," &c.

"The great cultivators of astronomy," says the late Professor Sir John Leslie, "are divided into two classes—'accurate and inventive observers, and profound and original theorists.' Of those illustrious men who, in the lapse of three thousand years, have devoted their labors to so noble a purpose, we may distinguish a few who have stood pre-eminently above their compeers, as observers, Hipparchus, Ptolemy, Tycho Brahe, Hevelius, Cassini, Flamsteed, La Caille, Bradley, Maskelyne, and Piazzi; and as theorists, Copernicus, Kepler, Newton, and, after some interval, Clairaut, D'Alembert, and Euler, and in our own times the associated names of La Grange and La Place."

Mr. Peter Barlow, of the Royal Military Academy, Woolwich, in his English translation of Euler's Algebra, after enumerating some of his wonderful improvements and discoveries in almost every branch of mathematical and physical science, thus concludes:

"Possessing a mind of such wonderful comprehension, and disposition so admirably formed to virtue and happiness, Euler found no difficulty in being a Christian; accordingly his faith was unfeigned, and his love was that of a pure and undefiled heart. The advocates for the truth of revealed religion, therefore, may rejoice to add to the bright catalogue which already claims a Bacon, a Newton, a Locke, and a Hale, the illustrious name of Euler.

"The character of Euler is an object so interesting, that it is difficult to prescribe a limit to reflections when they are once indulged; one is attracted by a sentiment of admiration that almost arises to the emotion of sublimity, and curiosity becomes eager to examine what talents, and qualities, and habits, belonged to a mind of such superior powers."

At the period of Sir I. Newton's decease, Euler had just reached his 20th year, and two years before he was hailed by Newton as a rising star of the first magnitude. The whole of his life was devoted to the benefit of mankind, and in the morning of the day on which he died, (Sept. 15, 1783,) he had been engaged in calculating the orbit of Herschel's planet, and the motion of aerostatic machines.

Mr. C. has associated the names of the Bernoullis with that of the illustrious Euler. The two elder Bernoullis first distinguished themselves by their labors in cultivating the higher calculus invented by Leibnitz; and this powerful analysis was afterwards brought to its present state of perfection by Euler and other continental mathematicians. The fluxionary analysis, invented by Newton, is now, even in England, almost extinct. The long but bloodless war which agitated the scientific world, (the war of problems,) and the high and commanding position the Bernoullis took in that memorable contest, sufficiently demonstrates their great prowess. John Bernoulli, says Leslie, "spent a long life in extending, by the activity of his genius, every branch of mathematical and physical science. He corresponded with all the foreign societies, and the numerous prizes he bore away proved a source of income. His Treatise on Seamanship came out in 1714, and his Dissertation on the elliptical figure of the planets appeared in 1730. But his various philosophical papers were carefully collected into four quarto volumes, and published, in 1742, at Geneva and Lausanne. He died, full of years and of glory, on the 1st Jan., 1748."

From the flippant way that Mr. Cheverton speaks of Kepler, one would be apt to imagine that he considered him only as a fifth or sixth rate astronomer. He allows, however, that he, (Kepler,) *did discover two laws of the planetary motion*, which bear his name. *Two* laws! Pray, does Mr. C. deny one of them? I thought every astronomer had admitted that he discovered *three laws*, and here they are:

Law 1. All the planets move round the sun, (or the satellites round their primary,) in such a manner, that a line drawn from a planet to the sun describes areas proportional to the time of motion.

Law 2. The orbits described by the planets round the sun, or the satellites round their primary, are ellipses, having the sun or primary planet in one focus.

Law 3. The squares of the periodic times of those bodies which revolve round a common centre, are proportional to the cubes of their mean distances from that centre.

Perhaps this last law of Kepler is rejected by Mr. C., as he may have discovered that it is not in accordance with his own theory on the motion of bodies in resisting mediums. I would recommend him to read the Life and Discoveries of the great Kepler, by the Rev. Dr. Small, of Dundee.

I have still, Mr. Editor, some other remarks to make on this subject; and if you will allow me to continue them, for at least one paper more, I will feel much obliged to you. In the mean time, I am, Mr. Editor, yours, with respect,

Lewis Frend.

Basil, Sept. 15, 1834.

A New Threshing Machine, which is worked by manual labor, instead of by horse power, has recently been introduced into this county from Norfolk, and found to possess all the advantages of the horse machine. It employs eight men, four of whom turn two windlasses, which supersede the horse wheel; it threshes the corn quite as clean as the old machines; and in substituting human labor for brute power, it obviates the powerful objection to which the former improvement was obnoxious, of diminishing the employment of a redundant population.—[Stamford Mercury.]

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* Perhaps Mr. C. will favor us with the equations of a few of the simplest of these strange curves.

IMPORTANT IMPROVEMENT IN THE SEXTANT.—Mr. D. Rowland, of London, has effected an important improvement in the sextant by a very simple yet ingenious contrivance. We had often heard Mr. Rowland's invention spoken of in terms of high commendation, but have had no opportunity of bearing testimony to the merits of his truly valuable sextant, until Thursday last, when he exhibited its powers at the Plymouth Institution, at the close of the lecture. It happened that the very evening on which Mr. H. Woollcombe (the President) had obligingly made arrangements for Mr. Rowland to explain his instrument to the society, Mr. Davies Gilbert, late President of the Royal Society, honored the Plymouth Institution with his presence. The conversation which took place on the subject of the "Double Sextant" was exceedingly interesting. Mr. Gilbert, some of the members of the institution, (particularly Mr. Walker, of the Dock Yard,) and several strangers, offered their opinions on its advantages, which we think may be summed up generally under the following heads:

1st. The old sextant being limited to a range of 120, the lunar distances in the Nautical Almanac were only computed to that extent. Now, navigators know that lunar observations are of the utmost importance in long voyages by checking errors in chronometers; they consequently avail themselves of lunar observations, and prefer those taken by day, because the horizon is more distinctly seen, and the altitudes are more correctly taken, than by night. It will, therefore, be desirable to extend the distances in the Nautical Almanac, between the sun and moon, to 140 degrees.

2d. When an artificial horizon is used, no angle of altitude above 60 degrees could be taken with the old sextant; of course the latitude could not be found by a meridian altitude of the sun, if this altitude exceeded 60 degrees. By the new instrument, these difficulties vanish, since the meridian altitude of all the heavenly bodies may be taken by it when vertical and doubled by the artificial horizon.

3d. In addition to the above advantages may be added the following, namely, Since the sextant will possess a range of 240 degrees, it will of course span the visible hemisphere with the utmost ease. Now, if the dip be known, the refraction may be measured by the instrument at any place, and at any time. But this is not all: we know that our globe is not a perfect sphere, but of a spheroidal form; consequently tables for dip and terrestrial distance, if computed for a sphere, must be erroneous when applied to a spheroid. Dip for altitudes, or objects taken east or west, would differ for objects in a north or south direction, because meridians of longitude continued round the globe are elliptical, whereas parallels of latitude are a series of circles of unequal diameters. This being the case, it follows that the span of the visible hemisphere, in the direction of the earth's axis, will be different from that taken in a transverse direction. Rowland's "double sextant" would measure this difference at once, and point out a dip for each latitude, and each direction, with regard to the poles. This improved instrument may be used for ascertaining the true figure of our earth, and may either prove or disprove its form, as deduced from measured acres of its surface, or from calculations made from data furnished by the pendulum.—[Plymouth (Eng.) paper.]

MUSCI, OR MOSSES.—There are about 40 genera, and 330 species of this class. They are called winter plants, and are found to cover mountains as high as perpetual snow. Growing in patches, they cover the most barren spots, and thus prepare the earth for other vegetation. When growing on trees, they protect them from the severity of the winter.

FOOD CONSUMED BY A COW. — Moubray states that the average annual consumption of a cow is from one to one and a half acres of grass, and from a ton to a ton and a half of hay.

COMPARISON OF COTTON AND HEMP.—Mr. Hammond: The following contrast of the hemp and cotton plants, in an agricultural point of view, seems to the writer to be correct; but he has reason to believe that a great deal of incredulity exists in relation to it, otherwise more interest would be taken in eliciting a discussion upon the subject, and diffusing among the farmers of Hamilton and other counties of this state, correct information in relation to the superior value of their hemp lands when turned towards the production of that article.

Cotton.—It is *known* that *this plant*, when young, is one of the most delicate, and very liable to be destroyed by disease, not only in its incipient state, but at maturity, by the rot, the rust, the caterpillar, the frost, and storms of wind and rain, as is now experienced from those which occurred in the months of September and October of the present year. It is known that the average crop of the cotton lands of the states of Mississippi and Louisiana does not exceed 400 lbs. of ginned cotton, or one bale to the acre of that weight; and to realize that quantity, the best seasons and the best cultivation by hand and horse hoeing are required; that, in addition, a great deal of hand labor is required to pick it out of the pods lock by lock, to gain a bale fit for the market. And the average price per pound for the last ten years has not much, if any, exceeded to the planter ten cents per pound. And lastly, it is known to be an exhauster of the land, from the necessity that exists that the plant be permitted to come to maturity, unless the seed are rotted and returned to the soil.

Hemp.—This is *known* to be a very hardy plant, and though it requires good land to produce the heaviest crops, does not require, after the first preparation of the soil and seeding, very much additional labor in the cultivation. It is known that if it is cut, (as it always should be,) before the seed are ripe, when the lint only is wanted for market, that it exhausts the land but very slightly—and if the improved machinery for breaking, and the recently invented "Hemp Cutter," are employed, it can be taken off the land, dew rotted and broken, with as much despatch, and even more, than 1600 lbs. of cotton in the seed, (the quantity required to make a bale of 100 lbs.) can be packed, ginned, and baled. It is known that the average quantity of clean hemp per acre may be put down at 800 lbs. the maximum being 1000 lbs. and the minimum 600 lbs.; and that the average price of clean hemp for the last ten years at Maysville, Kentucky, has been $5 and about 10 cents per 112 lbs. It results, then, if these data be correct, that if 1000 acres of land be cultivated in hemp, it will produce 800,000 lbs. of clean hemp, worth $40,000, equal to the product of 1000 acres in cotton, producing a bale of 400 lbs., worth 10 cents per lb., or $40 per acre!

Should such facts as these be suppressed? Yet we hear very little, comparatively speaking, of the value of our hemp lands, and much of the great value of the cotton crop, and the facility of cultivating it. Is it not because the latter is cultivated on large estates by the employment of large capitals belonging exclusively to a few individuals, whose crops, worth say from 10 to $40,000 each, sounds larger; whereas, if divided among all those employed in producing them, would no longer show as they do when concentrated in a few individuals.

I will say nothing of the tobacco crop. I will leave the planters of that article in Boon and Campbell counties, in Kentucky, who have recently lost their crops by the frosts of September last, to contrast their labor and gains with those of the hemp grower of Mason county in that state, who is now selling his crop in this market and elsewhere, at $5, and more, and no delay. To say nothing further, it is known that these counties are scarcely within the tobacco region, as Mr. M'Duffie very correctly said of the sugar plant in Louisiana. *A Friend to Agricultural Improvement.*—[Cin. Daily Gazette.]

FIRE FROM ASHES. — Some time in the month of November, passing a neighbor's barn, we discovered the straw on the dung heap, which was heaped up against the barn, to be on fire. In a few minutes the building would have been in flames. The fire was occasioned by hot ashes thrown on the heap. The following spontaneous combustion from ashes is from a lecture on heat, by Prof. SMITH, formerly of New-Haven.

"Perhaps there are few people who are acquainted with the fact that ashes made by burning hard wood, such as ash, maple, &c., in a fire place, and taken up dry, are capable of producing spontaneous combustion, simply by receiving a degree of moisture, or by coming in contact with a wet board or stave, or being exposed to a very damp atmosphere. It is generally believed when fire is kindled by ashes, that it is caused by coal being put away with the ashes while on fire; but this is a mistake. The coals, if they were on fire, when buried in ashes, and excluded from atmospheric air, would soon be extinguished, or if they were not, they could not kindle fire with the atmospheric air excluded. The spontaneous combustion of ashes proceeds from a very different principle.

"Hard wood ashes, when they are first made, and while they are kept dry, contain a metal called potassium, which is the basis of potash. This metal is very combustible, and has so strong an affinity or attraction for oxygen, the supporter and cause of combustion, that it takes oxygen from water, the moment that it touches it, and burns with a vivid flame, and the

product of this combustion is potash, that is, potassium saturated with oxygen, or what may be called the oxide of potassium. It should be noticed, too, that water is a compound of oxygen and hydrogen, and that when the potassium comes in contact with water, it takes the oxygen from it, and the hydrogen being set free increases the combustion. The simple explanation then is this: dry ashes, when first burnt, contain in them a metallic substance, which is highly inflammable, and which is set on fire by moisture. Quick lime and water produce heat sufficient, in some instances, to set wood on fire, but ashes and water produce a much more intense heat. In adding water to ashes there is a real combustion of the metal contained in the ashes; the metal being a combustible substance, requiring nothing but the oxygen of water to set it on fire."—[N. Y. Farmer.]

From the forthcoming number of the "Mechanics' Magazine and Register of Inventions and Improvements."

COMPARATIVE VALUE OF FUEL.—As a knowledge of the relative value of the various kinds of fuel in use cannot fail to be of interest to all, and of benefit to most of our readers, we do not hesitate to publish at length the following very valuable article from Porter's Chemistry of the Arts. The information contained therein, if properly applied to the every-day business of life, will amply repay each reader for his subscription to the Mechanics' Magazine—even if he has paid in advance. The table of the comparative value of the 64 different kinds of fuel should be frequently read by those who desire to use economy in obtaining their supply of fuel.

Whatever kind of fuel it may be considered best to employ, it is extremely desirable that it should be as dry as possible, otherwise a great part of the heat it contains will be lost in converting the water in the fuel into vapor, which of course escapes up the chimney without producing any useful effect.

Fuel is often unnecessarily exposed to the weather, or put in wet places; and the injurious effect of introducing damp into a close fire-place is never considered.

Pit Coals.—There is considerable difference between the pit coals; and it has perhaps been too little attended to by those who are the chief consumers of this expensive article. The subject has not even been studied with much attention, except so far as relates to the production of gas; and the facts that have been established by these researches are not very useful in other applications of fuel.

Caking coal, also called binding coal, crozzling coal, is obtained in great abundance from the extensive coal-fields in Northumberland and Durham; and is that which is sold in the London market as Newcastle coal.

When heated, this coal breaks asunder into small pieces; and the heat being raised to a certain degree, the pieces cohere, and form a solid mass, from which property it is called caking-coal. It lights easily, and burns with a lively yellow flame. It requires to be frequently stirred or broken up, particularly when it cakes very hard; but different varieties differ considerably in this property. Of the Newcastle coals, the best Wall's-End make a brilliant and pleasing fire, burn away quickly, and do not cake hard, hence it is preferred for heating rooms; but the Tanfield Moor burn slowly, cake very hard, and afford a strong and long-continued heat, and is used in furnaces and forges. The other varieties are of an intermediate character.

Caking coal gives out a great quantity of heat, and, with attention, burns a long time; consequently, where it can be procured at a reasonable price, it is commonly preferred.

From the trials of Mr. Watt, it appears that a bushel of Newcastle coals, which weigh, on an average, eighty-four pounds, will convert from eight to twelve cubic feet of water into steam, from the mean temperature of the atmosphere; and that a bushel of Swansea coal will produce an equal effect.

Dr. Black states to the effect, that 7 pounds .91 of the best Newcastle coal will convert one cubic foot of water into steam, capable of supporting the mean pressure of the atmosphere.

In some experiments tried by Messrs. Parkes, it appears, that by their improved method of constructing boilers, an effect was obtained, equivalent to converting one cubic foot of water into steam from the mean temperature, with 7 pounds .45 of coal, in the case where the greatest effect was produced; but at a mean, 8 pounds .15 of coal were necessary to produce the same effect; which is only one quarter of a pound less than the mean of Mr. Watt. From a mean of several experiments, Smeaton makes it require 11 pounds .4 of coal to produce the same effect; but the kind of coal is not described.

Mr. Tredgold found that after the brick-work, &c. of the boiler of a steam-engine was warmed, a little less than one pound of Wall's-End coals would make a cubic foot of water boil, from the mean tempera ure of fifty-two degrees. To produce the same effect with inferior coals, a stronger draught, and more time and attention, was necessary.

Splint Coal, or hard coal, called slaty cannel coal by Kirwan, is esteemed equally valuable, for many purposes, as the Newcastle caking coal. It is obtained near Glasgow, in Ayrshire, Scotland, and in several of the English and Welsh coal-fields.

A greater heat is necessary to make it kindle than is required for caking coal, and consequently it is not so well adapted for a small fire; but a large body of splint coal makes a strong and lasting fire. It does not produce so much flame, nor so much smoke, as caking coal, and does not agglutinate or bind together.

The splint coal of Scotland was considered by Smeaton to be equal to Newcastle coal for steam-engines.

Cherry Coal, or soft coal, constitutes, says Dr. Thomson, the greater part of the upper seams of coal in the Glasgow coal-fields; and it is also abundant in Fifeshire. He considers the Staffordshire coal to be of the same species; and the Edinburgh as intermediate between it and splint coal.

It readily catches fire, and burns with a clear yellow flame, giving out much heat; and the flame continues till nearly the whole of the coal be consumed. It burns away more rapidly than either caking or splint coal, and leaves a white ash. For most purposes it is less economical. It is easily distinguished from caking coal, by its not melting or becoming soft when heated. It makes a more agreeable fire, and does not require to be stirred. It requires care and management in an open grate, even to burn the small fragments which are made in breaking up the pieces to a fit size for the fire. Hence the small coals are often mixed with clay and made into balls. When these balls are dry, they make an excellent addition to the fuel for an open fire, producing a very durable heat.

Mr. Watt states that one hundred weight of good Wednesbury coal will produce the same effect as one bushel of Newcastle coal.

Wood.—In some places wood is used for fuel; its effect in producing heat is found to depend considerably on its state of dryness. Several experiments, made by Count Rumford, show the effect of dry wood to be much greater than that of unseasoned. Unseasoned wood contains about one third of its weight of water. The kind of wood is also a cause of some difference; from the experiments of Count Rumford, lime-tree wood gives out most heat in burning.

With his improved boilers Count Rumford made 20 pounds .10 of ice-cold water boil with one pound of dry pine wood. The same weight of pine wood unseasoned, would produce less effect by one-seventh. Beech wood afforded much less heat than pine; for one pound of dry beech made 14 pounds .33 of ice-cold water boil. A cubic foot of dry beech weighs about forty-four pounds.

According to Fossombroni, wood produces heat enough in its combustion to evaporate twice its weight of water, or to prepare two-thirds of its weight of salt. Count Rumford's trials make the effect of wood about one-third more, which may fairly be attributed to his superior skill.

Peat, considered only as a fuel, may be divided into two kinds. The first is compact and heavy, of a brownish black color, and with scarcely any vestiges of its vegetable origin remaining. This is the best kind. When it is once lighted it preserves fire a long time.

The second kind is light and spongy, of a brown color, and seems to be a mass of dead plants and roots, which have undergone very little change; it inflames readily, and is quickly consumed.

Peat gives out an odor, while it is burning, which is disagreeable to those who are not accustomed to it. It affords a mild and gentle heat; but is not a good kind of fuel for supplying furnaces for

boilers; it is much better adapted for flues. It is of various qualities: some burn quickly with a bright flame; others burn slowly, and, according to Clement and Desormes, afford one-fifth of the heat that would be given out by an equal weight of charcoal. This nearly coincides with the ratio given by Blavier and Miche.

The weight of a cubic foot varies from forty-four to seventy pounds; and the dense varieties afford about forty per cent. of charcoal; the other varieties nearly in proportion to their density.

Charcoal.—Mr. Dalton, by heating water, obtained a result equivalent to melting forty pounds of ice with one pound of charcoal. But Dr. Crawford's experiments give sixty-nine pounds of ice melted by one pound of charcoal. Lavoisier's give ninety-five pounds and a half; Clement and Desormes ninety-five pounds; and Hassenfratz's trials, on various kinds, give a mean of ninety-two pounds of ice melted by one of charcoal, his highest result being ninety-six pounds, and lowest one seventy-four pounds. Mr. Tredgold considers forty-seven pounds of ice melted by one pound of charcoal as the real average effect of that fuel. A cubic foot of charcoal weighs about fifteen pounds.

Coke.—Lavoisier makes the quantity of coal to be that of coke as 605 is to 552 when the same effect is produced; and in addition to this increased power of giving out heat, it must also be considered that coke gives out no smoke in burning, whence it should always be used in furnaces seated in towns, in order to prevent any annoyance to the neighbors.

The present prevalent use of gas, for lighting towns and even houses, has brought a considerable quantity of *gas coke* into the market, which does well enough for heating rooms, but is far inferior to the stifled coke in its heating power, so that smiths and iron founders invariably use the latter kind, and when a great heat is required, the chemist should follow their example.

Coke has been tried against wood in Paris for warming the Opera-House. Fifty-eight pounds of coke, costing there about 1*s.* 3*d.*, produced the same effect as 160 pounds of wood, costing there about 2*s.* 6*d.*

Charred Peat.—According to Messrs. Blavier and Miche it requires 1666 pounds of charred peat to produce the same effect as 740 pounds of common charcoal.

The charred peat, made by stifling, is superior, in its power of producing heat, to that made by distillation. Unfortunately the stifled charred peat is a kind of pyrophorus, which takes fire if it becomes accidentally wetted, or even in moist weather. In consequence of this property several accidents have happened by the rain finding its way into places where it is kept; it is on this account forbidden, by the laws of some countries, to be kept in towns.

Therefore the Dutch, who burn this fuel, not only in their houses, but even in pans under their feet while they are at church in winter, are in the habit of charring it at home as it is wanted. It is first burnt in the kitchen, and when they find it is red hot quite through, they then take it off the fire, put it in a close earthen or copper pot, and cover it down with a wet woollen or linen cloth, and by the air being excluded the fire is soon extinguished, and when it is cold it will resemble charcoal, except being covered with white ashes, and will, if properly charred, burn with scarce any smoke, and very little of the suffocating quality which charcoal has. This it is that makes the charred peat so proper for green-houses, for charcoal burnt in them is very prejudicial to the plants, and often fatal to the person who attends them.

[The intelligent author has here certainly fallen into a popular error in regard to the true cause of the suffocating quality of burning charcoal. The product of the combustion of charcoal must be essentially the same as from charred peat: the combustible part of both is little else than pure carbon, and the products of their combustion are of course pure carbonic acid. The popular notion is, that the unpleasant odor exhaled from burning charcoal, which has for some time been exposed to a damp atmosphere, and particularly when first ignited, is the suffocating principle: hence the common impression that ignited charcoal taken from a common fire may be burned with impunity in an unventilated room, and that charred peat, which does not exhale the peculiar odor of charcoal, is a safer and less objectionable fuel under the same circumstances. Many lives are annually sacrificed from this erroneous notion. The only true ground of preference of charred peat for burning in green-houses is the slow and gradual manner in which it consumes. Charcoal, in this respect, is much less manageable. It is the sudden and unequal heats from charcoal, rather than any essential difference in the product, that renders its use so objectionable.]

The usual method of burning this peat in Holland, especially by the poor, is in cast iron kettles, and for boiling any thing over it this way saves half the fire it would otherwise take if burnt on a hearth, or in a grate, by the side of the pot reflecting the heat.

[The small Philadelphia furnaces, fabricated from the South Amboy clay of New Jersey, now in general use in our Atlantic cities, are admirably calculated to secure an economical expenditure of heat in the combustion of charcoal for culinary purposes, and for a similar reason. But they ought never to be used in an unventilated room.]

Adjoining to many of the capital towns in Holland there are a great number of small gardens with little summer houses, most of which are built with wood. Near Rotterdam there are nearly a thousand of these gardens, and almost all of them have some orange trees in them. In the winter they are preserved from the intense frosts, which generally last there for nearly three months, by means of this charred peat, the natural firing of that country, which is burnt in an earthen pan, or cast iron pot, in these little summer houses.

A collected view of the data from these experiments and comparisons is given by Mr. Tredgold. It is as follows:

Kind of Fuel.	Fraction of a pound that will heat one cubic foot of water one degree Fahrenheit's scale.	Pounds of fuel that will convert one cubic foot of water into steam.
Newcastle, or caking Coal	0.0075	8.40
Splint Coal	0.0075	8.40
Staffordshire cherry Coal	0.0100	11.20
Wood, dry pine	0.0172	19.25
—— dry beech	0.0242	27,00
—— dry oak	0.0265	30.00
Peat, of good quality	0.0475	53.60
Charcoal	0.0095	10.60
Coke	0.0069	7.70
Charred Peat	0.0205	23.00

It will appear, as Mr. Tredgold justly observes in his very excellent "Principles of Warming and Ventilating Public Buildings," that the utmost effect we can hope to gain in applying fuel must be less than double the measure of effect here given; and even to attain that effect, all the caution of conducting a philosophical experiment must be continually employed, which will be found impracticable on a large scale, and altogether incompatible with the simple apparatus and small share of attention which can be devoted to this end in real business, although there are not wanting persons who promise four, six, and even ten times these effects.

Improvement of Fuel by Mixture.—It is surprising that so few attempts should be made to improve the fires which are made in the open chimneys of elegant apartments by preparing the fuel; for, as Count Rumford observes, nothing surely was ever more dirty, inelegant, and disgusting, than a common coal fire.

Fire balls, of the size of goose eggs, composed of coal and charcoal in powder, mixed up with a due proportion of wet clay, and well dried, would make a much more cleanly, and, in all respects, a pleasanter fire than can be made with crude coals; and it is believed would not be more expensive fuel. In Flanders, and in several parts of Germany, and particularly in the duchies of Juliers and Bergens, where coals are used as fuel, the coals are always prepared before they are used, by pounding them to a powder, and mixing them up with an equal weight of clay and a sufficient quantity of water to form the whole into a mass, which is kneaded together and formed into cakes; which cakes are afterwards well dried, and kept in a dry place for use. And it has been found, by long experience, that the expense attending this preparation is amply repaid by the improvement of the fuel. The coals thus mixed with clay not only burn longer, but give much more heat than when they are burnt in their crude state.

It will doubtless appear extraordinary to those who have not considered the subject with some attention, that the quantity of heat produced in the combustion of any given quantity of coal should be increased by mixing the coals with clay, which is

certainly an incombustible body; but the fact is certain.

In composing fire balls, it is probable that a certain proportion of chaff, of straw cut very fine, or even of saw dust, might be employed with great advantage. It is wished that those who have leisure would turn their thoughts to this subject; for it is conceived that very important improvements would result from a thorough investigation of it.

For the purpose of lighting a fire speedily, *kindling balls*, composed of equal parts of coal, charcoal, and clay, the two former reduced to a fine powder, well mixed, and kneaded together with the clay moistened with water, and then formed into balls of the size of hens' eggs, and thoroughly dried, might be used with great advantage instead of wood.

(To be continued.)

MECHANICS MEETING.

We call attention to the proceedings of this meeting. It is honorable to the mechanics that they thus feel and express their unwillingness to have their pursuits associated in public estimation with what is deemed fitting punishment for felons.

At a large and respectable meeting of Mechanics and others, opposed to the system of State Prison Monopoly, held at Euterpeian Hall on Tuesday evening, the 20th inst. Gideon Lee, Esq. was appointed Chairman, and Messrs. Thomas Constantine, D. Berrian, P. Hedl, Joseph P. Simpson, J. C. Tucker, John Anderson, and Robert Smith, were appointed Vice Presidents, and Robert Taylor and John Renmick appointed Secretaries.

The call of the meeting being read, the report of the Executive Committee, with the Memorial and resolutions, were submitted. After which the meeting was addressed by Messrs. Robert Walker, Robert Taylor, Austin Baldwin, B. Gillespie, D. K. Minor, and Alex. Ming, jr.

The report of the Executive Committee, together with the resolutions and memorial, were on motion unanimously approved.

The Executive Committee respectfully report, that the delegates appointed at the meeting held in the Park, in this city, on the 30th June last, proceeded to Utica, and attended the State Convention of Mechanics, which assembled on the 20th August, and your Committee is highly gratified in being able to state—that notwithstanding the prevalence of the cholera in several parts of the State prevented many Delegates from attending; ninety-nine Delegates were present, and represented thirty four Mechancal branches of business. The following is a list of the branches represented, and the number of Delegates from each branch.

From the Tailors 10, Cabinet Makers 9, Coopers 6, Saddle & Harness makers 6, Cordwainers 7, Blacksmiths 4, Hatters 4, Stone Cutters 4, Chair Makers 4, Silver Platers 3, Marble Cutters 3, Tin Plate Workers 3, Plane Makers 3, Builders 3 Coach Makers 3, Carpenters 3, Printers 2, Brush Makers 2, Watch Makers 2, Iron Founders 2, Tanners and Curriers 2, Cabinet and Chair Makers 2, Piano Forte Makers 1, Locksmiths 1, Brass Founders 1, Comb Makers 1, Masons 1, Silver Smiths 1, Machinists 1, Burr Stone Manufacturers 1, Copper Smiths 1, Plough Makers 1, Wagon Makers 1, Potters 1.

Your Committee report, That although the convention was composed of persons from every section of the State, and assembled together without any previous arrangement, as it respected the course to be pursued to obtain redress, yet were they of one heart, and one mind—they were determined to exert themselves to the utmost,—to unite together as *mechanics*, not as *partisans*,—and they unanimously resolved, that they would pursue the present detestable Prison system of this State, till justice be accorded to the just claims of Mechanics.

A corresponding committee in each County was appointed, consisting of two Mechanics, and a central committee of six Mechanics who reside in Utica. The central committee has recommended the citizens of each county to memorialize the Legislature on the subject of employing convicts at mechanical business'. The corresponding committees of Counties have communicated this information to the Executive Committee of counties, and memorials are now receiving signatures in many parts of the State In accordance with the recomendation of the central committee, a memorial will be submitted to this meeting. The Convention also recommended that a Convention be annually appointed to meet at Utica on the 3d Wednesday of August in each year, until we obtain redress.

The utmost harmony and unanimity prevailed among the Delegates, while together, and they parted with a determination never to give up the contest, until *this prison system*, which robs them of their bread, is abolished. Your Committee have endeavored to bring the subject before the public in its proper light, and great exertions have been made by Mechanics throughout the State to convince the community of the errors and injustice of the system, and notwithstanding that but a year since, many were found who approved of the system; and many who took neither part nor lot in the matter; yet now, it is generally admitted that the system needs alteration; and we are pleased to add, that Agriculturists, Trades, Mechanics, and Judges of Courts, are now giving their testimony against it, and are heard to exclaim, it is wrong, unjust, and degrading to mechanics—it must be put down;—and we will use our exertions to render obsolete and unknown, the term "*State Prison Monopoly.*" Your Committee has since its appointment held sixty-seven meetings, has corresponded with the corresponding Committees of counties, the Central Committee, and many members of the Legislature, and has expended for printing, postage, room hire, &c. upwards of $1000, and it is to be hoped that it will not all be labor in vain but, that we may yet have the satisfaction of experiencing a total change in the system, and be able to say the Legislature of the State of New York, in enacting laws respecting prisons, has had in view the republican maxim, "the greatest good to the greatest number." The Committee add, that the members of the Assembly from this county have given satisfactory evidence to them, that their exertions will be used to remedy the evil of which we complain; and already has the subject been referred to a Special Committee of the Assembly, as we desired, instead of the Standing Committee on prisons; and one of the members from this county is Chairman of the Select Committee. Your Committee in conclusion, submit the following resolutions:

1. Resolved, That this meeting deem it highly expedient to express publicly our fixed and unchanged opinions of the injurious and oppressive bearing of the labor of our State Prisoners, as now employed, on the Mechanic Trades and Mechanic Interests.

2. Resolved, That the recent and emphatic expression of public sentiment, in accordance with ours, by all classes and all parties of our fellow-citizens, strongly confirms the correctness of our views, and inspires us with courage and energy to persevere in our efforts for an early remedy.

3. Resolved, That we think we perceive an earnest of speedy relief in that measure of the Government constituting a special Board of Commissioners to inquire and report on this grievance to the present Legislature.

4. Resolved, That we do most cordially concur in the sentiment of Governor Marcy, as expressed in his Message, "That no consideration connected merely with the income of the Prisons, should be permitted to interpose any obstacle to removing all just grounds of complaint."

5. Resolved, That we firmly believe that the Agricultural portion of our State, when convinced of the extent of the grievances we complain of, will most cheerfully co-operate with us in the removal of them.

6. Resolved, That we feel more honest sympathy for a single innocent Family, deprived of subsistence by the interference of Culprit labor, than the banishment of a host of felons would cause us.

7. Resolved. That while the evils of excessive competition among individuals and selling goods and warse for less than their cost, soon cures itself by the exhaustion of capital so employed, it would be madness for individuals to attempt to compete with the exhaustless capital of the State when so employed.

8. Resolved, That this Meeting recognize as two of the great fundamental principles, on which the superstructure of our State Constitution is founded, the protection of property, and an equal and uniform system of taxation.

9. Resolved, That we are convinced from practical experience, that the present system of State Prison labor is partial and oppressive in its operation upon us as Mechanics, and violates every just principle of taxation, in compelling us to pay indirectly much more than the just and equitable ratio of Taxes for the support of the State Prisons at Sing Sing and Auburn.

10. Resolved, That not only do we consider these mammoth institutions unjust and anti-republican, as it affects our pecuniary interests, but as much more injurious and reprehensible as it affects what is as dear to us as life, our characters as citizens and Mechanics. As it is but too evident that the direct and necessary consequence of our present system is to lower and degrade us, and make the character and profession of a Mechanic synonomous with that of convicted felons.

11. Resolved, That we are compelled to declare, as our settled conviction, that the present system of State Prison management instead of operating as a school of moral reform, most generally is a school of vice and a nursery of crime, nay more, that when their degraded inmates are vomited forth upon society, experience too fatally illustrates that they not only propagate their vicious principles among those with whom they associate, but their conduct inflicts a stigma on the hitherto honorable character of Mechanics, degrading even the virtuous in their own estimation and that of their fellow citizens.

12. Resolved, That it is our hope that every class of Mechanics in every town in our State will see the necessity of union and concert of action on this subject, and that they will again come forward as the heart of one man to insist on a redress of the grievances under which we suffer.

13. Resolved, That for ourselves, we will pursue this subject with unabated zeal and untiring perseverance, that we will neither slumber nor rest, till the name of State's Prison Monopoly and Prison competition with Mechanic Trades be mentioned with the things that were, a mere memento of by-gone oppression and mistaken Legislation.

A motion was made and unanimously approved that the present Executive Committee be continued with power to add to their numbers and fill all vacancies that may occur in their body. A vote of thanks to the Executive Committee, was unanimously adopted, for their past services.

Resolved, That the Executive Committee be empowered and instructed to make arrangements for obtaining signatures to the memorial.

The following extract from a letter from Thomas Jefferson was read.

MONTICELLO, SEPT. 24th, 1823.

Thomas Jefferson returns his thanks to Mr. —— for his view of the inside of the New York State Prison. It will certainly have effect towards reforming our ideas of the penitentiary system which, however humane, does not answer the purposes of correction. It is high time to resort to the original idea of solitary imprisonment debarred of all employment.

It was then Resolved, that the proceedings of this meeting be signed by the officers and published in the daily papers.

GIDEON LEE, President,

THOMAS CONSTANTINE, DANIEL BERRIEN, PAULUS HEDL, JOSEPH P. SIMPSON, JOHN C. TUCKER, JOHN ANDERSON, ROBERT SMITH — Vice Presidents.

ROBERT TAYLOR, JOHN REMIC — Secretaries.

N. B. As an evidence of the feeling existing among Mechanics on this subject, we state that about 2000 signatures were obtained to the memorial, on the above meeting.

NEW-YORK AMERICAN.

JANUARY 17—23, 1835.

LITERARY NOTICES.

BIOGRAPHY OF THE SAVIOUR AND HIS APOSTLES, WITH A PORTRAIT OF EACH; by the author of "the History of the Bible," &c. New York: General Agency Office, Nassau street. We don't know when we have seen a more neatly published and attractive little volume. The style of engraving, which is by *Ormsby's* machine, is new and striking, presenting the head *in relief*, as on a *cameo* or medallion, and beautifully shaded. The portraits are all taken from *Leonardo de Vinci's* celebrated picture of "The Last Supper;" and both in likeness to those in the copy, and in spirited expression and execution, are deserving of all commendation. The biographies are carefully compiled and avouched throughout by reference to the New Testament.

In addition to what we have said of this little volume, our readers will perhaps not be displeased with an account of the machine which turns out without aid from, or even sometimes the supervsion of, human agency, such fine works of art, as these portraits display.

The inventor, *Mr. Ormsby*, is a native of Connecticut: the process is that of medallion engraving, heretofore carried on laboriously by hand; but now, with this machine, it can be carried on to any extent without any human agency, after the plate and the copy are once adjusted, and the mechanism, of which a weight is the moving power, is set to work. It can only be applied to raised surfaces; that is to say, any cameo, medal, or embossed design. It cannot copy with effect a flat surface, such as an engraving. Mr. Ormsby exhibited to us the machine in action, but we have so little mechanical knowledge or skill, that we should wholly fail in any attempt to describe, although we could at once perceive and comprehend, its accuracy, and efficiency, and ingenuity.

The plates in this volume are the first executed by the machine, and with the vignettes, present samples of the various kind of work and shading it is capable of producing.

ROMBERT, A TALE OF CAROLINA: 2 vols. 12mo. MUNRO & FRANCIS, Boston, 1835.—Of this new American novel just published, but which we have not read, we have the following notice from one who has read it, and in whose taste and judgment we have confidence.

"The design of this book—for in these days it would seem that novels must have a *design* over and above all literary and pecuniary considerations—is to illustrate *fanaticism*, and hold it up to detestation; and, so far as that goes, the author of Rombert is eminently successful. The sketches are occasionally extravagant, it is true; and much that is intended for accurate delineation is wrought up to the borders of caricature; but, in the main, the leading object is ingeniously pursued and well developed, and probably no one will read the book without an increased disgust for that most revolting of moral maladies—fanaticism.

The work is interspersed with historical notes, showing that many of the details are matters of fact, a circumstance which essentially promotes the corrective purpose of that author; but, in the same ratio that such notes give value to the book as a moral essay, do they detract from its value as a novel. If one is to follow a writer through the regions of fiction, he prefers an uninterrupted journey; and if molested by digression and episode he will soon imagine (what it is material to the writer that he *should* imagine) that he is travelling through realities, and taking a lesson from the experience of real life. But these constant references to historical proof—these frequently recurring indorsements of the author's veracity—very much weaken the illusion. The prominent faults of the work as a novel, originate from its embodying too much of plot, character, incident and catastrophe; too much *materiel*, in short, for one romance. When considered separately, each part is skilfully conducted; but when collectively, all the parts are not harmoniously combined; nor, indeed, could they be, within the compass of six hundred duodecimo pages if Scott himself had written them. Taking it as a whole, however, and regarding it as the first essay of an inexperienced writer, (which, from the nature of its faults, it certainly must be) it is a work of great merit, as it unquestionably is of great interest. Its defects, which are many, are those of a beginner; but its beauties, which are also many, are those of true genius. The author needs little but judicious criticism on the part of his friends, and careful revision of his own part, to become eminent in these days of literary fecundity: and if he can gain an ease in composition and a polish in language, together with the tact of *omitting* what is *immaterial*, and avoiding indistinctness in his narrative, he may hope to stand prondly and permanently in the front rank of American novelists."

THE AMERICAN MUSICAL JOURNAL, a Monthly Repository of Musical Literature, &c. &c.; No. 2, vol. 1; N. York, JAS. DUNN.

THE FAMILY MINSTREL, a semi-monthly Journal, devoted to the interests of Musical Education, &c. &c.; No. 1, vol. 1; New York, CHARLES DINGLEY.

Here are two candidates for the favor of the musical world—the first, the *Musical Journal*, addressing itself to all lovers of music—the second, the *Minstrel*, asking only or chiefly the suffrages of those who prefer sacred music. There is perhaps scope enough for both—if not, the chances would seem most in favor of the more comprehensive enterprize.

THE ALEXANDRIAN, a republication of valuable Literary and Scientific Works, No. 1; price *six cents*. N. York, WM. PIERSON.—If people don't read now, and good books too, it is not because reading is an expensive indulgence; for here, for example, not to mention other cheap publications, in six numbers at six cents each, *D'Israeli's Curiosities of Literature* will be completed. That work sells for four dollars: it now will be accessible in good print, though rather small, to as many as choose to buy, for 37 1-2 cents.

CRUISE OF THE U. S. FRIGATE POTOMAC ROUND THE WORLD, DURING THE YEARS 1831-4. BY FRANCIS WARRINER, A. M.—N. Y., LEAVITT, LORD & Co.—We always see with pleasure publications which, like this and others issued from the press by gentlemen connected with the naval service, go to shew, that in the most distant seas, and in places however remote from their native land, the feeling of "what will they say of us at home?" and the desire to justify the solicitude, pride and the confidence of that home—seem to accompany these gallant ocean rovers.

The volume before us—tho' not very skilfully prepared—is interesting, and presents in its details and the manner of its narrative, a guarantee of the truth and sincerity of its statements. We make room for a short extract, descriptive of the state of expectation on board the Potomac when the attack on *Quallah-battoo* was resolved on.

Our ship now presented a busy scene. It was determined to commence an attack upon the town the next morning, and every necessary preparation was accordingly made. Muskets were cleaned, cartridg boxes buckled on, cutlasses examined and put in order, &c. During the evening, the Commodore sent for the officers commanding the several divisions, and gave them their instructions. They were ordered to land, surround the town and forts, and demand indemnity for the outrage committed upon the Friendship, with the punishment of those concerned in the barbarous massacre of her crew. I had some conversation with a few of the junior officers, upon the subject of the perilous enterprize in which they were about to embark. They felt that it would not be so much a matter of jest, as they had been disposed to think it might be. There was some shrinking at the thought of impending danger. They might however have remembered, that

> "The brave man is not he who feels no fear,
> For that were brutish and irrational;
> But he whose noble soul its fears subdues,
> And bravely dares the danger nature shrinks from."

As eight bells, (twelve o'clock at night,) all hands were called. Those assigned to take part in the expedition were mustered, when Lieut. Shubrick, the commander of the detachment, gave them special orders. No man was to utter a word after he had entered the boat; no one was to fire till the command was given; and no man was to desert his ranks. Considerable time was occupied in getting the men into the boats, and in making all things ready. Several of the officers felt impatient at the delay, and were fearful that they would be unable to effect a landing in season to surprise the enemy. At length the gallant band, to the number of two hundred and eighty-two men, including officers, left the ship about two o'clock.

The last words we heard were, "Let fall, give way, men." Here was a moment of interest. All before in regard to fighting the Malays had been mere talk; but now there was a stern reality.—The period had arrived when the grand object of our voyage hither was to be accomplished. The death-warrant of the Malays had been pronounced, and avenging spirits had gone forth to demand satisfaction for the wrongs of their countrymen. The blow was to be struck, and victory or defeat was to ensue. There was something awful in the scene before me. The expedition proceeded slowly on their midnight errand in perfect silence, save an occasional whisper from the officer in command, with muffled oars, the soft dipping of which we could faintly hear, and nothing but the stars of heaven to guide them to their place of disembarkment.—My own reflections were any thing but those of a cheerful character. I found it impossible to divest myself of the fit of melancholy which had seized me. I retired to my couch, but not to sleep. It seemed as though a spell had fallen upon the ship. Not a word was spoken. The steps of man had ceased to be heard, save those of the officer on watch. A silence like that amid the mournful repositories of the dead, pervaded the ship, interrupted only by the striking of the bell, which proclaimed the hour of the approaching destiny of the Malays. The hours moved tediously on, as we anxiously awaited the dawn of day. Each one's thoughts were busied in contemplation of what might be the fate of his companion in arms. In this state of painful suspense, I for a moment lost myself in sleep, when I was awakened by the quarter master exclaiming, "Mr. W——, hot work going on ashore, Sir." It was then broad daylight, and I dressed myself and hurried on deck. The scene was one of fearful interest. The din of war was heard throughout the town, threatening destruction to every opposer. The reports of the cannon and musketry, as they came thundering across the water, told us plainly that the work of death was going on.—Sheets of fire were arising from the town wrapped in flames, and the launch, with its carronade and swivels, was doing full execution upon the retreating foe.

Commodore Downes had stationed himself in the larboard gangway of the ship, with his glass, not to leave till the engagement shall be over.—He felt anxious to know how the affair would terminate, and at times thought it would be necessary to take the ship nearer in shore, in order to protect his men. The remainder of us were posted in different parts of the ship, some in the tops, some hanging upon the shrouds, and some on the "Jacob's ladders," all gazing with breathless anxiety. Some of the sailors were in the rigging, and among them our unfettered Malay prisoners, watching the movements with immense interest. We were all surprised at the resistance apparent on shore.

About an hour and a half after the action commenced, two boats were seen pulling off to the ship. They approached us in silence, and from the cast of gloom visible in the countenances of the boat's crew, we conjectured that some of our brave fellows had fallen. The sight of two bloody corpses soon proved that our conjectures had been but too true. I never shall forget the appearance of their features. They were much distorted, and the countenance of one, especially, exhibited a wild and terrific aspect. His long hair hung in matted tresses over his shoulders and glaring eyeballs. His name was Brown.—He was shot near one of the jungles, where a body of the Malays were lying in ambush. The ball entered his breast, and the last words of this unfortunate marine, as he was falling, were, "I am a dead man." The name of the other person was Smith, a maintopman. He met his death just at the entrance of one of the forts. He had discharged his musket and wheeled about for the purpose of re-loading, when he was shot directly through the eye. One of the sailors standing near him was slightly wounded by the same ball. Smith was a tall, well built man, distinguished for his nerve of arm and integrity of soul. In the hour of peril, when the fierce winds of heaven were spending their fury on our ship, he was ever among the first to meet their rage.

An hour afterwards the American colors were seen proudly waiving over the battlements of the largest fort. We had been in deep suspense, anxiously awaiting the result of the contest on shore. The sight of our flag waiving in the breeze, and the rush of the main body of our forces into the fort, raised a smile of joy upon every countenance.

Guy Rivers—*Second Edition.*—The popularity of this work has induced a call for a second edition. In revising Guy Rivers for reprint, the author has shown much good sense, in availing himself of the criticisms which followed its publication, and making occasional alterations here and there in the phraseology. These, without impairing the spirit, add essentially to the correctness and value of the work.

Rollin's Ancient History, with a Life of the Author. By James Bell. First complete American Edition. 2 vols. George Dearborn.—We do not hesitate to pronounce this one of the most elegant and liberal publications that has long issued from the American press. As a cheap but handsome reprint of a book that ought to be in every one's library, it may be regarded as belonging to a series of valuable works, got up in similar style, and now continually appearing from Mr. Dearborn's press. They are published in the royal 8vo. form, and generally form two volumes; nor is there one among the number, whose reputation Time has not stamped beyond all cavil. Every friend of sound letters will hope for their continuance, and that their enterprising publisher may be amply rewarded.

The volumes now issued, in addition to the matter contained in the ordinary editions of Rollin, include his history of the Arts and Sciences of the Ancients; which whether from fatuity or impertinence has been generally struck out by the English publishers, who have hitherto been servilely copied in this respect by their American brethren. The work as now first given complete in this country, is embellished with maps and diagrams, and ornamented with two handsome vignettes, in addition to a portrait of the author.

Literary Items.

An interesting little volume has recently been published by M. Paulin of Paric, entitled, "Le Romancero Francais, ou Histoire de quelques Anciens Tryuvères, et Choix de leurs Chansons." These "Ancient Songs of Love and War," originally composed by French Trouvè, res; which have been buried in oblevion for the last 600 years are now once more brought to light by the fortunate investigations of this young "employé aux manuscrits" of the Royal Library.

M. Marcell has just published a History of Egypt, from its conquest by the Arabs to that by the French, in an 8vo volume.

Publications of the Messrs. Harper and Brothers, of New York.

"During the year that has just ended, the issues of this house have amounted to upwards of five hundred thousand books of an average size of Bulwer's "Last Days of Pompeii." This number is made up of new editions of books published by them in former years, and of sixty-five new works, making upwards of one hundred volumes; of these, forty-five were published with copy-right—either entirely American, or translations made in this country, or English works edited and improved by American authors: the remainder were re-prints from English books. During the early part of the year owing to the pressure of the money market and the general prostration of business, they curtailed their operations to a considerable degree, or the sum total of their publications in the course of the year would probably be greater than it is by two hundred thousand volumes; but even now it exceeds that of any former year. In their opinion, the number of books printed and published in the United States since the first of January 1834, is very nearly twice as great as it has ever been known before in the same space of time."

Mr. Van Hammer's History of the Turkish Empire is now completed in 10 vols. 8vo. The history terminates at the peace of Kainardji, in 1774.

A sort of literary congress is about to be held at Berlin in order to draw up some general regulations, with a view to secure the copy-right of authors and booksellers throughout the whole of Germany. A committee of booksellers have already been formed at Leipsig, and protocoles have been exchanged between this committee and the Berlin commission.

The first instance in the annals of Turkish literature, of works announced for publication by subscription, appeared in the Turkish State Gazette of October 22d, 1833, and the works thus signalized are three historical, five grammatical, and four political. As the historical works are by far the most interesting, we subjoin the titles of them.

I. Lives of the Sultans and Visers by Osmansade Ahmed Taib, who died in 1723, with a continuance by three others.

II. Lives of Muftis by Suleiman Seadedden Ben Mohammed, celebrated under the name of Mussakim Efendisade, and written by him in 1744.

III. Lives of the Reis-Effendis, by the Reis Effendi Ahmed Besmi, and with a continuation to 1807 by Suleiman Faik.

The new novel, by Miss Pardoe, author of Traits and Sketches of Portugal, is to be entitled, "The Mardens and the Daventrys."

"Young Hearts," a Tale, which is to appear under the sanction of Miss Jane Porter, will be ready in the ensuing month.

A Translation of the last work of the celebrated Schlegel on the Philosophy of History, is just completed, and will appear forthwith, in London.

Previous to her leaving England, Mrs. Jameson left in the hands of her publishers the corrected copy for a new and enlarged edition of her interesting work," The Lives of the Celebrated Female Soverigns.

SUMMARY.

The United States ship St. Louis, Com. Henley, reached Pensacola on the 25th ult. in three days from Havana. The Grampus and Experiment were in the neighborhood.

The United States frigatte Potomac, Captain Nicholson, reached Gibraltar in 23 days from Boston.

Despatch.—The Philadelphia National Gazette, printed probably about two o'clock yesterday afternoon, acknowledges the receipt by the Camden and Amboy Railroad, of the Courier & Enquirer of the same morning.

The passengers by the same line from Philadelphia, which they left at 8 o'clock, were yesterday landed in this city in six hours and twenty minutes.

Boston Jan. 13th.—A massive block of granite to form one of the pillars for the New Court House in this city, was started yesterday morning at half past nine o'clock, in Quincy, by a team of sixty-five yoke of oxen and 11 horses, for the city, under the direction of Gridley Bryant, Esq. It was brought by the way of the Brush Hill Turnpike, entered on Boston neck 20 minutes of 7 o'clock S. M. and arrived at the Court House half past 9, where it was welcomed with nine cheers, by a large concourse of people. And yet we dare say the unconscious block gave no sign of gratulation in return.

[*From the Mercantile Adv. of this Morning.*]

Our correspondent at Marseilles, under date of Dec. 10th, writes as follows:—"The cholera still rages on board the American men of war at Mahon. The *Delaware* had, on the 29th Nov. about 150 cases on board, and had lost about 30 men, but no officers. The authorities still kept them in quarantine, notwithstanding that several cases are daily declared in the town."

Buffalo, Jan. 12.—*Steamboat Burnt*'—We had an alarm of fire about nine o'clock last evening, caused by the conflagration of the Steamboat Daniel Webster, in the harbor. She was moored at the dock, in front of the store house of Pratt, Taylor & Co. The Steamboat Gov. Marcy lay immediately astern, and the Brig Indiana under her bows—all immovably fixed in the ice; while the wooden store house was only at the distance of a few feet upon the shore. When we reached the scene, the Webster was burning furiously, both forward and aft,—the centre around the engine not having yet kindled. The fire engines were placed upon the ice of the harbor, and attacked the flames simultaneously, at different points—which were finally quelled.

On visiting the boat this morning, we find her inside works entirely destroyed, with decks, upper works, and engine considerably damaged—but the frame apparently uninjured. The amount of damage we have heard estimated at from six to eight thousand dollars—no insurance. The Webster is owned, principally, by Pratt, Taylor & Co. of this city, Dows, Cary & Co., Albany, Allaire, New York, &c.; was new, and one of the swiftest boats upon the lakes.

The fire was the work of design, though no motive of the hellish deed is known. There had been no fire in the boat for more than six weeks past, and it appears to have been kindled both in the forward and aft part at the same time. The incendiary was a most considerate scoundrel, for he chose a night so calm, that the flames rose perpendicularly. Had the wind been high, several of the steamboats and vessels, with a range of extensive wooden storehouses must have been destroyed.

The Steamboat New York, also in port, has been twice fired within a few weeks, and in each instance, the fire went out, most fortunately, without damage, and before the fact was discovered. —[Whig.]

APPOINTMENTS by the Governor and Senate.—Tuesday, Jan. 13. 1835.

New York.—Garret Storm, Director of the Phoenix Bank. Charles Graham Jr. and John Harris, commissioners of deeds. Joseph Flynn, inspector of domestic distilled spirits.

A gentleman near Natchez, has liberated his slaves, about twenty in number, and furnished them with from $200 to $400 each, to promote their comfortable settlement in Liberia.

NEW ORLEANS, DEC. 29.

Unprofitable Risk.—The ÆRONAUT.—The day was beautiful for the ascension, a large company had assembled in the enclosure, soldiers and ladies were commingled among the groups—the fearless æronaut went up—but melancholy accidents brought his career to a brief close. The wind was too high for a safe ascension—it came in strong puffs, and his balloon and himself were liberated at the moment of a violent flaw. The car was swept along almost horizontally at first, striking the benches filled with spectators and throwing down and injuring several persons, and then was carried up and dashed against the chimney of the arsenal, standing in the enclosure, which was instantly struck down, and against which Mr. Elliot fractured his thigh bone. Several of the bricks of the chimney were thrown into the car, preventing its further elevation, and the æronaut was driven about among the tops of the houses; was forced through the upper window of one, bruising himself severely again, and cutting his face and head with the broken glass; —and was then jerked out, with several of the cords attaching the car to the balloon cut, and the car turned nearly botton upwards. In the midst of all the peril he discovered wonderful courage and presence of mind, and indeed to these qualities owes the preservation of his life. No one less intrepid and less self possessed could have escaped through the difficulties and dangers encountered by him. After clearing himself from the buildings of the city, he was swept towards the river, and notwithstanding his bruises, wounds and fractured limb, he asserts he would have continued upon his fearful journey had he not have been interrupted by the rigging of the shipping at the levee. He was blinded by the blood from the wounds over the eyes, or he thinks he could have guarded himself better against the accidents, and would have been able to throw out ballast enough to clear him of the vessels. His balloon caught at the mast heads of two ships, to the rigging of which he clung until rescued from his danger by the generous exertions of a friend and the sailors on board. The broken thigh bone was forced through his drawres and pantaloons. He was taken to his lodgings, and placed under the care of Doctor Luzenburg and Doctor King. He is in good hands, was comfortable last evening at nine o'clock, surrounded by kind friends and doing well.

Mr. Elliot is a worthy man in all respects; has an interesting family, for whose support as well as for the public gratification, he boldly perils his life and limb—the public sympathies are and ought to be with him, and an appeal will be made to the generosity of this community in his behalf. —[Bulletin.]

[FOR THE NEW-YORK AMERICAN.]

HYDE PARK, (Dutchess Co.) JAN. 10.

Unprecedented Cold Weather.—Since the 3d of this month, the thermometer has ranged lower in this place than has ever been remembered by our oldest inhabitants. I have for some time back been in the habit of keeping a list of the ranges of the thermometer; and since the 3d, send you an exact account of it, taken three times per day, at the hours of 7 A. M., 12 M., and 9 P. M. You may rely on the correctness of the following report. The thermometer is one of Poole's manufacture, Fahrenheit's scale, and was placed on the north side of the house.

1835.	7 A.M.	12 M.	9 P.M.	Remarks.		
Jan.3	0 2	5 0	0 10	Wind slight,	N.N W.	clear.
4	0 26	0 6	0 25	do	do	do
5	0 32	0 2	0	do	do	do
6	8 0	1 0	0 7	Wind strong,	do	hazy.
7	0 8	0 1	0 8	do	do	clear
8	0 12	1 0	0 5	Wind slight,	do	do
9	0 12	5 0	0	do	do	do
10	0 14			do	do	do

The city Inspector made his annual report of deaths during the past year, last evening. The total number from 1st January, to 31st Decembe was nine thousand and eighty-two, being an excess of 3336 over the last year. There were of consumption 1471; small pox 233: cholera 971; of these there were 4745 children under ten years of age.

SCHOOLS IN MASSACHUSETTS.—By a resolve of the Legislature, adopted on the 31st day of March last, returns were required to be made from the several towns, shewing the condition of the schools, to the office of the Secretary of State.—On the 31st of December, returns had been received from 261 towns, and there remained at that time 44 towns, by which none had been made.—In these 361 towns, there were 2,251 school districts; and the number of male children attending school between four and sixteen years of age was 67,499, and of female children 63,728. The number of persons between the ages of sixteen and twenty-one, returned as unable to read and write, was 158. There were in these districts 1967 male, and 2388 female instructers.—The amount raised by taxes for the support of schools in these towns was $310,172 87, and by contribution, $15,141 28; and the estimated amount paid for tuition in academies and private schools, was $276,575 75. The average number of scholars attending academies and private schools, was 24,749. The amount of the local funds returned is about $127,000, and there are funds invested in real estate, the amount of which is not stated. In those cases, where only the income is given, the aggregate amount is about $2,800 per annum. From the above returns, it appears that the number of scholars in the common and private schools and academies is 158,-976, and the amount annually expened $601,-895 90.

According to the Report of the Auditor General to the Legislature of Pennsylvania, the Banking capital in the city and county of Philadelphia, (exclusive of the U. S. Bank) amounts to $12,-812, 875, the bank notes in circulation amount to $4,053,247; and the specie on hand is $5,332,961. The Country Banks of Pennsylvania have an aggregate capital of $4,966,689; their notes in circulation are $3,532,049; and their specie on hand is $1,089,640. The total banking capital in the State is $17,779,562, and the amount of notes discounted is $26,749,619.

The Knoxville (Tenn.) Register of the 7th instant states that the steamboat Reliance, after a detention of ten months in the Muscle Shoals, had at last made her way through the difficult obstructions of the Shoals, and reached Decatur on the 29th ult. She was expected at Knoxville in a few days.

Schr. Hudson, of N. Y.—Capt. Wm. Sherwood states that his schr. struck on Stoney Point, near Cape Poge, about 4, A. M. 6th inst. when hauling off, having sounded in shoal water. The sea was heaving violently, and it was impossible to carry off an anchor. At 9, she leaked very fast, and could not be kept free. Attempted to land in the boat—three men reached the shore—the boat was then hauled off to the schr. by means of a line attached; a passenger and two seamen put off; when about half way to the shore, the boat upset, but the men succeeded in reaching the shore. The mate with three men, then attempted in vain to get the boat back again to the schr. and proceeded to the Light House at Cape Poge, leaving those on board exposed to the cold and sea, which was continually breaking over the vessel. At 11 at night, Mr. Edward Donelly expired on the deck of of the vessel, and at 12 Mr. Pierson Newell expired. At 9, next morning, the crew returned from the Light House, resolved to rescue those on board or perish. The gale having somewhat abated, they boarded the vessel and took from her Capt. S. his son 16 years old, and Mr. John Clark, of Ipswich. They all proceeded to the Light House, where they were kindly received. Mr. Peter Laffen, of Halifax, died immediately after reaching the Light House. Part of the crew remain at Cape Poge, badly frozen. Capt. S. and Mr. Clark are at Edgartown, badly frozen. Mr. Newell belonged to Boston—Mr. Donelley's residence was unknown.

FOREIGN INTELLIGENCE.

THE LATE FOREIGN NEWS, by way of Boston, is not very important. It seems certain, that Parliament must be defeated. Sir Robert Peel having, by accepting office, vacated his seat in the House of Commons, has put forth an address to the Borough of *Tamworth*, which he represents, which, as embodying the sentiments of the new ministry, and setting forth the principles upon which they mean to proceed, will be looked upon with interest.

Captain Ross (the navigator) is now Sir John Ross and is about to receive "the honors of the third class of the Order of Bath."

The dates from Paris are to the 18th The trial of the *National*, defended by M. *Carrel*, with his wonted courage and eloquence, before the House of Peers, excited great interest. He spoke in terms of uncompromising contempt for those noble persons; and in referring to their past acts, pronounced the death of Ney to be a judicial assassination, to which sentiment, a Peer present, Marshal Excelsman, distinctly assented.

The Chamber of Deputies had been engaged, through its Standing Committees, on two projets for an amnesty, which, however, were rejected by eight out of nine of those Committees. Hence these propositions would not be publicly discussed.

M. Passy was re-elected a President by 270 out of 310 votes.

The first division of the Polytechnic school, to the number of 115, had been dismissed; it does not appear for what offence.

General Bernard has taken his seat in the French Chamber of Peers.

From Spain the news is of little moment, though *Mina* would seem to have intimidated the Carlists, and restrained their irruptions from their mountain fortresses.

LONDON, DEC. 19.—The Earl of Aberdeen has been removed from the Admiralty to the Colonial Department, to make way for Earl de Grey, who is to be First Lord of the Admiralty.

Lord Granville Somerset is to be First Commissioner of Woods and Forests.

Lord Lowther is, we understand, to be Chancellor of the Duchy of Lancaster.

The Board of Controul is to consist of Lord Ellenborough, Sir Andrew Grant, and Messrs. Planta and Sullivan.

Sir John Beckett is appointed Judge Advocate General.

There are rumors of Sir James Searlett having a peerage, and that Lord Combermere is to go to Ireland as Lord Lieutenant, or to India as Governor General or Commander in Chief.

It seems generally believed that a dissolution of Parliament will take place soon after Christmas.

Postscript, six o'clock p. m.

The following appointments have now transpired:

Lord Edward Somerset, Surveyor General of Ordnance.

Colonel Perceval, Treasurer of Ordnance.

Sir William Rae, Bart., Lord Advocate.

Mr. Stuart Wortley, under Secretary of State for the Colonies.

It is also reported that the Duke of Buccleuch is to be Lord Lieutenant of Ireland.

FRONTIERS OF POLAND, Dec. 6.—The Emperor Nicholas has traversed Poland without leaving a trace of his presence. The mitigation of the condition of the political prisoners, which was promised, has not taken place. The women who were arrested for not having denounced their husbands, remain in prison.

A few days before the arrival of the Emperor a revolting sentence was passed upon the sister of the unfortunate Szpeck, who was shot at Warsaw for some political offence. This young girl has been sent to the military colonies, where she is to be forced to marry a Russian soldier.—Her mother has at the same time been sentenced

to ten years' hard labor at Wilna. Mademoiselle Kareka, an inhabitant of the Palatinate of Kaliez, has been torn from her family and sent no one knows where. The motive for her arrest is said to have been the discovery of a ring, which had a motto displeasing to the Russian police. The presence of the Emperor did not lead to any change in these arbitrary and attrocious sentences. Prayers and supplications were made in vain.

Patriotism of the Ladies.—About forty of the youngest, prettiest ladies of Frankfort, in Germany, all of whom belonged to the society for the relief of the Poles, were recently found implicated in procuring the escape of several prisoners confined for political offences. They sent saws and files to the prisoners wrapped up in pastes and cakes—a specimen of feminine tact and spirit, worthy of all praise,

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[*From the Journal of Commerce.*]

CANTON, JULY 28, 1834.

Lord Napier, the British Chief Superintendent, has arrived in Canton, and has organized his establishment. His views are not known, but it is generally allowed that his presence is entirely uncalled for. Some of the Hong Merchants were sent by the Vice Roy to Macao to stop him from coming to Canton, but they missed him, and he arrived here in the night. We doubt whether any serious obstacle will be presented to his remaining, provided he keeps quiet. But his Lordship will be much mistaken if he looks for any diplomatic courtesies from the Chinese authorities. It is probable that his residence will be tolerated on the ground that he is a merchant in the pay of the Company; but if he plays the maudarin and forces upon the Vice Roy his official dignity—or if he interferes with the established customs of the country, intermeddling with its judicial concerns, or attempts changes in its commercial regulations, it is more than likely he will receive an unqualified order to quit, expressed in terms not the most complimentary.

CANTON, JULY 1st—The immense injury which this province has suffered far exceeds the damage done by the inundation of last year. The natives are horror struck, and, though blinded by pagan superstition, acknowledge the hand of God. The calamity not yet being known to its full extent, as even at the present moment the water has not yet entirely subsided, it is thought that four fifths of a most promising crop in the low ground is destroyed. We are not informed that lives have been lost, but have to record with deep feelings of compassion that several thousand houses in and near the city of Canton have fallen down. Thus houseless and starving, the wretched inhabitants are left without any resource.

CANTON, JULY 8.—The late inundations must have caused great destruction to property in houses, furniture, and crops, and there can be no doubt that many lives have been lost. The government of China does not like to dwell upon these dreadful visitations, and the official statements never divulge the real extent of calamities by flood, fire, or earthquake. When these phenomena frequently happen, they are considered as caused by the bad government of officers of the district, whose conduct is supposed to influence the course of nature; therefore, they have a personal interest in the supression of facts connected with such occurrences We have made several inquiries as to the extent of damage occasioned by the late floods, but have not succeeded in obtaining any correct information. On the contrary, we know that statements grossly exaggerted have been laid before us. A short time hence, when the people recover from their alarm and losses, an account somewhat to be trusted may be had.

CANTON JULY 15.—The weather for the last three weeks has been unseasonably hot, the thermometer ranging from 90 to 96 degrees in the shade.

FROM MANILLA, BATAVIA, AND CANTON.—The ship Covington, Holbrook, arrived at Baltimore on Friday, in 142 days from Manilla. The editors of the American are indebted to the attention of Mr. G. P. Nelms, supercargo, for a memorandum containing the information which follows:

At Manilla, when the Convington sailed, business was dull, it being too early for the season ships to make their appearance. A large portion of the old crop of sugar was on hand, which holders were anxious to realize; they could be readily obtained at $4 1-2 per picul. Other articles of export were scarce.

Advices from Canton to the 15th August had been received. A letter of that date to Mr. N. says:—"The only news I have to give you is, that Lord Napier, the British superintendent of Trade has not been acknowledged by the Chinese authorities. By some it is supposed that a stoppage of trade will take place, but I think otherwise. Lord Napier has been deprived of his Comprador and Chinese servants, but he has stated to his countrymen that he will not allow *personal* insult to weigh with him; although I think he will be quick enough to take notice of the first insult offered to the trade. Two British frigates have just arrived. The Logan, Capt. Bancroft, from Gibraltar, is the last American arrival. Dr. Morrison of Macao, is dead. All your countrymen and Macao friends are well."

The advices from Batavia are to the 24th September. They communicate the melancholy intelligence that Mr. LATMAN and Mr. MUNSON, the two American Missionaries who embarked in March last from Batavia to Sumatra, were *murdered and eaten* by the natives of the Batta country, in the interior of Sumatra, on the 28th July last. Their bereaved widows were still at Batavia, waiting anxiously for an opportunity to return to their native land.

FROM CENTRAL AMERICA.—Guatemala papers to Oct. 14th, received at New Orleans, represent every thing at that time quiet. San Martin and Flores, who attempted to renew the civil war in the State of San Salvador and Nicaragua, were completely routed by Morazan, and compelled to desist from their purpose. This victory of the federal troops, says "El Mississippi," a Spanish paper in New Orleans, will doubtless convince this feeble faction of the superiority of the federal government, both physical and moral.

Common Schools.

ANNUAL REPORT OF THE SUPERINTENDENT.

On the 7th inst., the Secretary of State presented to the Assembly his annual report as Superintendent of Common Schools. The following extracts embrace some of the most interesting matters which it contains. A complete view of the condition of the common school system, however, can only be obtained by a perusal of the entire document

1. *The condition of the Common Schools*

There are in the state, fifty-five organized counties, containing eight hundred and thirty-five towns and wards. The commissioners of common schools of the several towns, are required to make an annual report of all the school districts in their respective towns, to the clerk of the county to which they belong; and it is the duty of the county clerk to send certified copies of all such reports to the Superintendent of Common Schools. This duty has been performed in every instance, and the necessary returns have been received from every town and ward in the state.

By the table marked B, it will appear that there were in the state on the last day of Dec. 1833, nine thousand eight hundred and sixty-five organized school districs, from nine thousand three hundred and ninety-two of which reports have been regularly made to the commissioners of common schools.

In the districts from which reports have been received, schools have been kept an average period of eight months.

The whole number of children over five and under sixteen years of age, residing, on the last day of December, 1833, in the districts from which reports have been received, was five hundred and thirty-four thousand and two; and the whole number of children who had received instruction in the same districts during the year 1833, was five hundred and thirty-one thousand two hundred and forty. The exact average period of time during which the whole number of children taught have attended school cannot be ascertained. The reports show only how long the schools have been kept open, and how many children during that period have received more or less instruction.

The average number of organized districts to each town, is twelve and a half; and the number of children receiving instruction, compared with the number of school districts from which they were reported, will give an average of fifty-six and a fraction to each district.

II. *Estimates and Expenditures of the School Moneys.*

By the reports of the commissioners of common schools, it appears that the sum of three hundred and fourteen thousand eight hnndred and eight dollars and thirty-six cents was paid by them to the trustees of the several school districts, in April, 1834. The amount of public money expended by the said trustees in the year 1833, was three hundred and sixteen thousand one hundred and fifty-three dollars and ninety-three cents; of which sum, one hundred thousand dollars was received from the Common School Fund, one hundred and ninety seven thousand six hundred and fourteen dollars and thirty-seven cents, was levied by taxation upon the property of the inhabitants of the several towns and cities of the state, and eighteen thousand five hundred and thirty-eight dollars and fifty-six cents, was derived from the local funds belonging to particular towns.

By the abstract marked B, it will be seen that the amount paid for teachers wages, besides public money, is three hundred and ninety-eight thousand one hundred and thirty-seven dollars and four cents and exceeds by the sum of twenty-eight thousand four hundred and forty dollars and sixty-eight cents, the amount paid for teachers' wages, besides public money, in 1832. The whole amount paid for teachers' wages is seven hundred and fourteen thousand two hundred and ninety dollars and ninety-seven cents, from which should be deducted a few thousand dollars expended by the Public School Society in the city of New York for school houses.

The whole amount of money, therefore, expended for teachers' wages in 1833, exceeds the amount so expended in 1832, by the sum of thirty-six thousand eight hundred and sixty-one dollars and fifty-three cents.

During the year ending on the 30th September, 1834, the productive capital of the Common School Fund has been increased by the sum of thirty-six thousand two hundred and seventy-four dollars and ninety-three cents; and it now amounts to one million seven hundred and ninety thousand three hundred and twenty-one dollars and seventy-seven cents. The actual receipts on account of revenue during the year ending on the 30th September, 1834, amount to one hundred and four thousand three hundred and ninety dollars and seventy-eight cents. Document D exhibits the increase and diminution of the fund during the same period. The several items of which the fund is composed, will be found in the paper marked E, together with an estimate of the revenue and the actual receipts on account of revenue for the same year, and a detailed estimate of the revenue for the year ending on the 30th September, 1835, amounting to one hundred and eight thousand four hundred dollars.

In 1833, the Superintendent made an estimate of the sum expended upon the common schools during the year 1831. Assuming the basis of that estimate to be true, the expense of the Common School system in 1833, would be as follows:

Interest at 6 per cent. on $2,116,000 invested in school houses,	$186,960 00
Annual expense of books for 531,240 scholars, at 50 cents each,	265,620 00
Fuel for 9,580 school houses, at $10 each,	95,800 00
Public money, as appears from the returns,	316,153 93
Amount paid for teachers' wages, besides public money, as appears by the returns,	398,137 04
	$1,262,670 97

This estimate does not, it is believed, exceed

the actual expense of the common school system, as there are several items, (of these is the expense of keeping school houses in repair,) which, from their uncertaintainty, have not been admitted into the estimate.

It would appear, therefore, that the whole amount expended on the schools in 1833, was one million two hundred and sixty-two thousand six hundred and seventy dollars and ninety-seven cents. Of this amount, the common school fund paid one hundred thousand dollars, a little less than one twelfth part; a little more than two-twelfths were levied by tax upon the towns and cities, with the exception of $18,538 56, derived from local funds; something less than three twelfths was paid by taxes levied upon the school districts by vote of their respective inhabitants; and more than six twelfths was voluntarily paid by the parents and guardians of children receiving instruction.

Thus it appears that three quarters of the whole amount annually expended upon the common school system of the state, is paid by taxes imposed upon themselves by the inhabitants of school districts, or by voluntary contributions of the parents and guardians of children receiving instruction.

The third division of the Report gives a detailed account of all the receipts into the Treasury on account of the School Fund during the year ending the 30th Sept. 1834, a statement of the various items, in which the fund is invested, &c. &c., which for want of room we are compelled to omit.

IV. Organization of the Common Schools.

The administration of the Common School system, in all matters enjoyed by statute upon those who are charged with its supervision and management, has attained as great a degree of regularity as is practicable. Returns have been received from every town in the state, and, with a single exception, through the channels prescribed by law. In the case referred to, the report of the commissioners of common schools having been accidentally retained until the time for sending it to the county clerk had passed by, was transmitted directly to the superintendent. The matter contained in the report now submitted to the legislature by the Superintendent, has been furnished through the agency of more than thirty thousand individuals; and of all the school districts in the state, nineteen out of twenty have made their reports in the manner required by law to enable them to participate in the benefits of the Common School Fund.

The extent of common school instruction in this State, so far as it relates to the number to those on whom its benefits are bestowed, admits of little if any change for the better. In this respect our system need not shrink from a comparison with any other. When considered under all its aspects, and particularly with a reference to the training of teachers, the Prussian, is perhaps superior to every other. But in regard to the number of those whom it embraces, it falls short of ours. In 1831, the inhabitants of Prussia amounted, exclusive of the army, to 12,780,745 souls. The number of scholars receiving instruction during the same periods in different public schools, was 2,047,352. Thus it appears that one in every 622 of the whole population, was, in that year, receiving instruction.

The population of this State, according to the census of 1830, amounted to 1,919,132. If the rate of increase from 1830 to 1833 was equal to the rate of increase from 1825 to 1830 the population of the State in 1833 was 2,101,000. During the same year, the number of children actually receiving instruction in the common schools amounted to 531,240. It therefore appears that one in every 395 of the whole population in this State, was, in 1833, receiving instruction in the common schools alone.

The incompetency of teachers is still the great evil of the common school system of this State, and it may, indeed, be said to be the source of the only other material defect, which pertains to it—a low standard of education in most of the schools. The evil, however, is by no means universal. There are many teachers of ample qualifications, and many schools of high standing, both as regards the nature and extent of their requirements. The only cause of regret is, that this is not the character of all. The principal obstacle to improvement is the low wages of teachers; and as this is left altogether to be regulated by contract between them and their employers, there would seem to be no effectual remedy for the evil but to inspire the latter with more just conceptions of the nature of the vocation, and its high responsibilities, and of the necessity of awarding to those who pursue it, a compensation in some degree suited to its arduous duties and requirements. So long as the compensation of teachers is on a level with that which is commanded by the most ordinary employments it is not to be expected that men of the necessary talents will prepare themselves for the business of teaching; but it may be justly said, that there is scarcely any vocation, in which the best talents can be employed to greater advantage. It has certainly not been common to assign to it a value at all commensurate with its importance; and it must be confessed, that while its end was to teach reading and writing and a few elementary rules in arithmetic and grammar, there was some reason to undervalue it. But on this subject more just views begin to prevail. However narrow the limit of instruction, it is obvious that the mere association of a teacher with pupils, who are at an age best fitted for the reception of strong and durable impressions, cannot fail to exert an influence upon their minds for good or evil, which may determine the complexion of their whole lives. Whatever the design may be, schools must, from the necessity of the case, be instrumental to the formation of moral as well as intellectual character; and it is of vital importance that the moral qualities and habits of the instructor, independently of his ability to teach, should, at least, carry with them no lessons of evil. But to enable him to discharge his duties in a manner suited to their great purposes, he should be fitted by his disposition and acquirements to give a proper direction to the moral sentiments, to bring into activity the intellectual faculties, to lay open those rich stores of knowledge, which are to be found in the nature of man and in the external objects by which he is surrounded, to create a spirit of inquiry and observation, and teach its application to practical uses. To accomplish these results, a high grade of qualification is indispensable; but nothing less, it may be safely assumed, will satisfy the existing desire for rational improvement or keep pace with the advances of science and the progress of just opinions. In order to command the services of men competent to discharge this elevated trust, an adequate compensation must be provided for them; for it cannot be expected that any occupation, excepting such as confer influence or distinction, will invite to it talent and skill without the promise of pecuniary rewards proportioned to its labors and sacrifices. Before the evil referred to can be wholly eradicated, a change must be wrought in public opinion; and it is believed that such a change is already in progress, and that it may be accelerated by measures, which are now under the consideration of those who have the power to adopt them. During the last session of the Legislature, a law was passed authorizing the Regents of the University to apply a portion of the revenue of the Literature Fund to the education of Common School Teachers; and it is understood that a plan will be matured, at an early day, to establish departments of instruction and discipline for the purpose, in connection with some of the organized academies. The execution of such a plan will but carry out a policy which was distinctly recognized by the Legislature in 1827, when the capital of the Literature Fund was augmented, to use the language of the law, in order "to promote the education of Teachers," although the design of the law was not sustained by the measures necessary to give it the form and effect of a system. Should these departments succeed in preparing for the Common Schools, a supply of well trained Teachers, it is believed that the influence, which the latter may exert upon the public mind, by the superiority of their methods of instruction over those in common use, will do much to bring about that change of opinion which is indispensable to the perfection of our system of popular education.

If the foundations of our whole system of public instruction were to be laid anew, it would perhaps be advisable to create separate seminaries for the preparation of teachers, although from the nature of our institutions it might be deemed arbitrary, if indeed it were practicable, to compel the school districts to employ them. It would be equally difficult without a great augmentat on of the Common School Fund, to present to the districts a sufficient pecuniary inducement to engage the individuals thus prepared; and it may be safely assumed that nothing short of a thorough conviction in the public mind that common school teachers are in general incompetent to the proper fulfilment of their trusts, and that the standard of education is extremely imperfect, would accomplish the object. If that conviction can now be created, the existing evils may readily be redressed.—Our common school system is so perfectly organized, and administered throughout with so much order and regularity, and so many academies under able management are already established, that it would seem the part of wisdom to avail ourselves of these institutions to the extent of their capacity, for the purpose of training teachers for the common schools. Their endowments, their organization, the experience and skill of their instructors, and their whole intellectual power may be made subservient to the public purpose in view, and with the aid which the State can lend, much may be effected. But whatever differences of opinion may prevail, with regard to the foundation of this plan in sound policy, the question has been settled by the legislature; and it remains only to carry it into execution with proper energy. Should it prove inadequate to the ends proposed, a change of plan may then be insisted on, without being open to the objection of abandoning a system which has not been fairly tested.

It may not be improper to remark in this place that the necessary connexion which exists between our common schools and the literary institutions of the state, including those of the highest grade, has been too frequently overlooked.—The academies have already been, in effect, without receiving from the state any direct pecuniary aid for the purpose, nurseries for common school teachers. The great body of those, who have either temporarily or permanently devoted themselves to teaching have been prepared at the academies with a view to that occupation, or to some professional employment. The instructors in the academies have in their turn, been educated in the colleges; and but for the latter, or some other system of classical and scientific education as a substitute for the course of training pursued in the colleges, the academies would obviously be destitute of the necessary supply of tutors.—Thus, all our incorporated literary institution minister to the improvement of the common school system, on which the great body of the people are dependant for their education. It is true, that colleges are apt to be regarded as aristocratic institutions, beyond the reach of the poor, and therefore beneficial only to the rich. But independently of the indirect benefit already referred to as resulting from them, it is believed that this prejudice will be found, on a close inspection, to be founded wholly in error. Men of fortune are obviously independent of them; for, however convenient they may be, wealth can always command the services of talent, and children of those who can afford the expense, may be educated at home or in private schools. But this expense, is altogether beyond the ability of individuals in ordinary circumstances. A man of little property may be able to educate his child in an institution, which, by reason of its endowments, can fix the charge for tuition at very reasonable rates. If the institution is so near that children can board at home, it is brought within the reach of an additional number. Indeed, many young men, altogether without property or pecuniary assistance from their friends, succeed now in gaining an education at college by their earnings during vacations. In the endowment of Union College, provision was made by the Legislature for indigent students. In the year 1823, books were furnished gratis for all who were unable to provide them, and seventy-three young men were "otherwise assisted from the fund

granted by the State for the purpose." It may be justly said that colleges are not necessary to the rich, but that they are to persons in ordinary circumstances of the greatest value. They serve to abolish the most important distinction which can exist under our political institutions and laws —the distinction between the educated and the uneducated—and they enable those, who are destined to rely on their own unassisted efforts, to enter into competition in the highest intellectual fields of enterprise, with those who have been sustained by the adventitious aids of wealth.

Whatever doubts may have been entertained with regard to the beneficial effects of institutions, sustained wholly or in part by Government patronage, for the higher departments of education, none, it is conceived, can reasonably exist in relation to our colleges on their present footing. None of them are so highly endowed as to be able to dispense altogether with the contributions from their pupils; they are generally dependent in a very great degree on public patronage for their support; they derive no regular income from the State Treasury; the same competition, which prevails in the ordinary transactions of individuals engaged in the pursuit of a common object, is so strongly felt by them, that professors without talents and industry will find no place in them, and the course of studies must necessarily take its complexion from the public wants, and cast off every thing, which is either useless or repugnant to the prevailing spirit of society.

But it is principally as accessory to the great objects of common school instruction, that our colleges and academies deserve to be cherished —as nurseries for those through whose instrumentality the standard of popular education must be raised to its proper elevation.

When measures shall be taken to train in the organized academies such a supply of competent teachers as to provide each town in the State with a few good schools, the contrast between the improved methods which will be introduced into them and those which are in common use, can hardly fail to produce in neighboring districts a degree of emulation, which will gradually bring the schools established in them to the same standard. Imperfect as are many of our Common Schools, they are, it may be confidently be said, in better condition than they have been at any previous time. The standard of education in general has gradually advanced, though very slowly. But in some Schools a high degree of excellence has been attained, and within the sphere of their influence improvements are gaining ground in others. In districts where the inhabitants have not had the opportunity of witnessing the beneficial effects of better methods of instruction, it is natural that they should be content with those to which they have been accustomed. But the good sense which the people carry into their ordinary transactions, will in this matter, as in all others, guide them to correct conclusions when the benefits of improved, and the evils of defective methods, are brought home to their observation. As the demand for competent teachers is augmented, and such wages are offered as to ensure their services, the number of those who prepare themselves for the business of teaching, will increase in a like proportion. Should departments of instruction for teachers be established in the existing academies, as is contemplated, and the plan prove efficient and become popular, it may be readily extended so as to be commensurate with the wants of the whole State.

For the adoption of the measures necessary to the perfection of our common school system we must rely mainly on the intelligence of the people. To assume that they are incapable of forming a just estimate of their true interests, or that, estimating them properly, they will be unwilling to do what is necessary to secure them, would be an impeachment of their good sense, which is not warranted by experience, and which, if admissible, would also impeach the wisdom of our whole political organization. Experience shews that the people require only to be furnished with the proper means of observation to judge rightly.—In the vicinity of the St. Lawrence academy, in which a system of lectures on the principles of teaching has been regularly delivered to a numerous class, during the last three or four years, the average rate of compensation for teachers has advanced about three dollars per month.—The school districts enter into competition with each other to procure the teachers prepared at the institution, which has been wholly unable to supply the demand. The teachers educated at the Andover Seminary, in Massachusetts, command readily a compensation for their services, which enables them to devote themselves to teaching as a permanent vocation. The same effects which have been produced in the neighborhood of the St. Lawrence academy will be visible elsewhere, when the same opportunities of observation are presented; and when the training of teachers is reduced to a system, and the standard of education in a few schools is raised to its proper elevation, the sound judgment and liberality of the great body of the people may be safely relied on for the extension of these improvements to every part of the State.

It has, indeed, been said that in establishing systems of public education the government, and not the people, must give the impulse. But, however true the observation may be of other countries, experience has shewn that it has no application to our own. The foundations of the common school system, which exists under different modifications of form throughout the northern and eastern States, were in most cases laid by the people, without the aid of the public authority. If there is any one sentiment with respect to our social condition which has prevailed more generally than any other from the earliest times, it is a deep rooted conviction of the importance of education for all classes. With regard to the extent to which intellectual cultivation should be carried in the common schools, opinion has certainly not kept pace with the progress of improvement in other matters; but as has been already suggested, the evil has grown out of the imperfect methods of instruction in common use; and in order to secure the correction of the evil, the necessary improvements in common school instruction must be brought under the same intelligent observation in which the foundations of the system were laid. If this be done, it is believed that no compulsory measures will be necessary to insure their adoption.

It was for a long time contended by the most profound writers, that the support of religious societies could not be safely entrusted to the voluntary contributions of the people. But our experience has completely overturned the arguments on which this fallacy is founded; and it gives us the strongest assurance, that the same enlightened sentiments which have so liberally sustained the established systems of religious worship and instruction, will with equal liberality, sustain those systems of early moral and intellectual cultivation, without which the generations to succeed us, would neither be fitted to discharge their duties to themselves, to their country, nor to the Power on whose providence depend the destinies of all.

In the last annual report of the Superintendent, he stated briefly the principal branches of study which were deemed essential to every individual, in order to fit him for the discharge of the duties of citizenship. The importance of the subject, and the increased attention which popular instruction has recently attracted, will, he trusts, be deemed by the legislature, a sufficient apology for repeating the enumeration then made, though no legislative action is required.

Grammar.—So much as is necessary to a correct comprehension of the different parts of speech, and such a course of exercises in parsing as shall render the student familiar with the practical application of the rules which govern their relation to each other. This branch is usually commenced too early, and much time expended to little or no purpose.

Geography.—A thorough knowledge of the geography of the state of New York and of the United States, and so much of the geography of the earth, political as well as physical, as treats of its general divisions of climates, soils and productions, and such elementary statistics as are usually engrafted upon geographical works.

History.—A familiar acquaintance with the history of the United States; and the elements of general history.

Arithmetic.—The usual course as far as and including the Rule of Three. To this course should be added the elements of geometry.

Civil and Criminal Jurisprudence.—A few practical rules of the former, and so much of the latter as points out the offences to which penalties are annexed by law. These may be compressed into a very narrow compass.

Constitutional Law.—The form of government and the fundamental principles of Constitutional law. A knowledge of these may be best obtained by studying the constitution of the United States and the constitution of the State of New York.

The duties of public officers.—So much as relates to our state, county and towns officers.—A brief and well executed treatise on this subject has already been prepared and published.

These subjects may be studied without difficulty, and without adding to the time necessarily devoted to elementary instruction, by retrenching from others, which occupy too much attention.—A great deal of time is lost by commencing the study of grammar at too early an age, and committing to memory abstract rules, the reason of which is altogether above the comprehension of the learner. The result is, that time is misspent, and there is danger also, that a distaste may be created for study by tasking the mind with acquisitions which it cannot understand, and in which it feels no interest. The memory may be more advantageously exercised in treasuring up useful knowledge, on a level with the capacity of the learner; and by directing the attention to subjects which awaken interest, application ceases to be a task.

The introduction of such improvements into the common course of school instruction as will make it equal to its high purposes is an object which may justly claim the countenance and cooperation of all classes. On our common schools we must rely to prepare the great body of the people for maintaining inviolate the rights of freemen. If the political fabrick cannot find in the public intelligence, a basis broad and firm enough to uphold it, it cannot long resist the shocks, to which, through the collision of contending interests it is continually exposed. Forty-nine out of every fifty of our citizens, receive their education in the common schools. As they advance to manhood, they are, for the most part, devoted to manual employments. Looking to their own industry as their only resource and to its fruits as the boundaries of their personal desires, the object nearest their hearts is to see their country prosperous, the laws administered with order and regularity, and the political importance, which the constitution has secured to them, maintained undiminished. The controversies to which conflicting interests give birth, are to be put at rest by their decisions. In the questions of policy, which are presented to them constitutional principles are frequently involved, and the relation they bear, and may in all future time bear to the government, is directly or indirectly affected. How important is it that there decision should be as enlightened as they will be honest; that with every motive to be upwright and conscientious in the exercise of their political rights, they should combine also the capacity to maintain them with independence and discretion! If they shall ever cease to bring to the settlement of these great questions a sound and enlightened discrimination, they cannot fail to become the dupes of artful leaders and their country a prey to internal discord.—From the genius of our political institutions, popular education is our only security against present and future dangers. Ignorance is said to be the parent of vice. With us it would also be the parent of those fatal disorders in the body politic, which have their certain issue in anarchy.

Happily, our system of public instruction embraces within it almost all, who are capable of participating in its benefits. Our only remaining duty is therefore, to provide, that it shall not, at any future day, be reduced to narrower limits, and that the standard of education shall be so advanced as to secure the highest possible degree of intellectual cultivation.

Lord Brougham lately expressed his surprize to a public deputation, that any one could doubt of the vast superiority of Mutual Instruction, in elementary sncools, and particularly for the children of the Poor.—[National Gaz.]

Value of Time.—It is said that a man who had accustomed himself to seize a pen whenever his wife was putting on her shawl and bonnet to walk, found, before he suspected such a result, that he had written a tolerable book. Wonders may thus be accomplished by all in their stray moments, would they but improve them. I would not prevent people from reflecting, from resting, or enjoying themselves; but the worst of it is, many waste large portions of their lives without doing any of these. Circumstances favor persons thus bent on rational enployment. Instead of idling away a half hour before dinner, or some appointment, if they take up a book or a pen, or undertake to do any little duty which demands their attention, they find often the time which they might have frittered away, much longer than they anticipated. Many a friend might be secured or obliged by a letter written at these intervals, by those who profess to have "no time." We all have "time," more or less, which might be devoted to the performance of neglected duties.—[Transcript.]

Asking Favors.—Many persons boast an independence in which I cannot sympathize. They pique themselves upon never asking a favor of any one. If it be the token of no worse characteristics, this habit is the sign of an unreflecting mind. Why, they are perpetually receiving favors, not only from Providence but from their fellow creatures, without whose kindness they could scarcely exist.

NOTICE TO MARINERS.

☞ *New Light-house of Barfleur, Department of La Manche.*—Navigators are notified that from and after the 1st April, 1835, the Fixed Light of the ancient turret of Barfleur, situated five marine leagues E. ¼ NE of Cherbourg, will be suppressed and replaced by a Revolving Light, which will be lighted up on the turret recently constructed, 61 metres S. 25° 17' W. of the old light, and 73 metres above the level of the full equinoctial seas. Its light will appear regularly every half minute throughout the night.—In fine weather, it will be visible at the distance of 8 marine leagues and the eclipses will only appear total at a distance of more than 4 leagues.

MECHANICS' MAGAZINE.

THE NUMBER FOR DECEMBER, which completes the fourth volume of this popular work, is published. It contains a portrait, engraved on copper of ROBERT FULTON, with a Memoir, and some documents respecting his claim to the honor of first originating steam navigation. Also, upwards of 50 articles of interest and utility, connected with the arts and sciences.

☞ The first number for 1835 will be ready very shortly. Subscribers who are deficient of numbers can be supplied, as the work is stereotyped.

The Mechanics' Magazine and Register of Inventions and Improvements is published by the Proprietors, D. K. MINOR & J. E. CHALLIS, at No. 35 Wall-street, New York: in *weekly* sheets of 16 pages, at 6¼ cents—in monthly parts of 64 pages, at 31¼ cents—in volumes of 384 pages, in cloth boards, at $1.75—or at $3 per annum, *in advance.* JOHN KNIGHT, (formerly proprietor of the London Mechanics' Magazine,) Editor.

AGENTS FOR NEW PUBLICATIONS.

HENRY G. WOODHULL, of Wheatland, Monroe county, New York, is agent for the following Publications:

The New York American Daily, at $10.00—Tri-Weekly, at $5.00—Semi-Weekly, at $4.00 in advance.

The American Railroad Journal, Weekly, at $3.00 per annum

The Mechanics' Magazine, two volumes a year, at $3.00 per annum.

The Quarterly Journal of Agriculture and Mechanics, at $5.00 per annum, or $1.25 per number.

The Family Magazine, 416 pages a year, at $1.50 in advance.

The Monthly Repository and Library of Entertaining Knowledge, of 36 pages a month, at $1.00 in advance, now in the 5th volume, bound volumes $1.25

The Ladies' Companion, of 54 pages a month, at $3.00 per annum, in advance.

The Rochester Gem, at $1.50 in advance.

All Communications addressed to me, at Wheatland, Monroe county, will be promptly attended to. September 19, 1834. n6v6 Cif.

☞ TOWNSEND & DURFEE, of Palmyra, *Manufacturers of Railroad Rope*, having removed their establishment to Hudson, under the name of *Durfee, May & Co.* offer to supply Rope of any required length (without splice) for inclined planes of Railroads at the shortest notice, and deliver them in any of the principal cities in the United States. As to the quality of Rope, the public are referred to J. B. Jervis, Esq. M. & H. R. R. Co. Albany; or James Archibald, Engineer Hudson and Delaware Canal and Railroad Company, Carbondale, Luzerne county, Pennsylvania.

Hudson, Columbia county, New-York, January 29, 1833. }

RAILROAD CARS,

Messrs. D. & J. MITCHELL, Eclipse Foundry, Hollidaysburgh, Huntington county, Pennsylvania, are now prepared to manufacture, at short notice, any number of Railroad Cars—in the most approved and substantial manner. jan. 24 t

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The following recommendations are respectfully submitted to Engineers, Surveyors, and others interested.

Baltimore, 1832.

In reply to thy inquiries respecting the instruments manufactured by thee, now in use on the Baltimore and Ohio Railroad. I cheerfully furnish thee with the following information. The whole number of Levels now in possession of the department of construction of thy make is seven. The whole number of the "Improved Compass" is eight. These are all exclusive of the number in the service of the Engineer and Graduation Department.

Both Levels and Compasses are in good repair. They have in fact needed but little repairs, except from accidents to which all instruments of the kind are liable.

I have found that thy patterns for the levels and compasses have been preferred by my assistants generally, to any others in use, and the Improved Compass is superior to any other decription of Goniometer that we have yet tried in laying the rails on this Road.

This instrument, more recently improved with a reversing telescope, in place of the vane sights, leaves the engineer scarcely any thing to desire in the formation or convenience of the Compass. It is indeed the most completely adapted to lateral angles of any simple and cheap instrument that I have yet seen, and I cannot but believe it will be preferred to all others now in use for laying of rails—and in fact, when known, I think it will be as highly appreciated for common surveying.

Respectfully thy friend,
JAMES F. STABLER, Sup't of Construction of Baltimore and Ohio Railroad.

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Having for the last two years made constant use of Mr. Young's "Patent Improved Compass," I can safely say I believe it to be much superior to any other instrument of the kind, now in use, and as such most cheerfully recommend it to Engineers and Surveyors.

E. H. GILL, Civil Engineer.

Germantown, February, 1833.

For a year past I have used Instruments made by Mr. W. J. Young, of Philadelphia, in which he has combined the properties of a Theodolite with the common Level.

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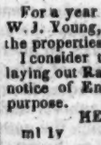

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Ship and Boat Spikes made full size under the head, so as not to admit water.

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Flat Bars in lengths of 14 to 15 ft coun'r sunk holes ends cut at an angle of 45 degr's with splicing pla's, nails to suit.

250 do. of Edge Rails of 36 lbs. per yard, with the requisite chairs, keys and pins.

Wrought Iron Rims of 30, 33, and 36 inches diameter for Wheels of Railway Cars, and of 60 inches diameter for Locomotive wheels

Axles of 2¼, 2⅜, 2½, 3, 3¼, 3½, and 3¾ inches diameter for Railway Cars and Locomotives of patent iron.

The above will be sold free of duty, to State Governments and Incorporated Governments, and the Drawback taken in part payment. A. & G. RALSTON.

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Models and samples of all the different kinds of Rails, Chairs, Pins, Wedges, Spikes, and Splicing Plates, in use both in this country and Great Britain, will be exhibited to those disposed to examine them. d71meowr

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☞ The Proprietors of the Mill Dam Foundry offer for sale or lease, their well known establishment, situated one mile from Boston. The improvements consist of

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No. 2. *Blacksmith's Shop*, 50 feet by 20, fitted with cranes for heavy work.

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No. 7. A range of buildings, 200 feet long by 36, containing counting room, several store rooms, a Brass Foundry, room for cleaning castings, a large loft for storing patterns, stable for two horses, &c. &c.

The above establishment being on tide water, presents greater advantages for some kinds of business than any other in the United States. Coal and Iron can be carried from vessels in the harbors of Boston, to the wharf in front of the Factory, at 25 to 30 cents per ton. Some of the largest jobs of Iron work have been completed at this establishment; among others, the great chain and lift pumps for freeing the Dry Dock at the Navy Yard Charleston.

The situation for Railroad work is excellent, being in the angle formed by the crossing of the Providence and Worcester Railroads. The Locomotive "Yankee," now running on the latter road, and the "Jonathan," purchased by the State of Pennsylvania, were built at these works. With the Patterns and Machinery now in the premises, 12 Locomotives and as many tenders, besides a great quantity of cars and waggons, could be made per annum.

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Boston, Dec. 29, 1834.